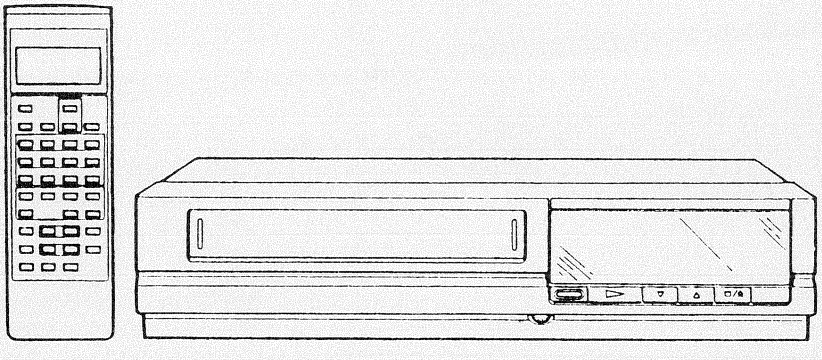
Service Manual

VIDEO CASSETTE RECORDER

VHS PAL HQ HIGH QUALITY PICTURE VPS VIDEO PROGRAM SYSTEM

UHER

VH-791
VCR-330
VH-901



Chassis Code: **A**

Bestell-Nr.: **3501**

Bei technischen Änderungen können Ergänzungsblätter angefordert werden.

Specifications are subject to change without notice.

SPECIFICATIONS

Power Source :	220V 50Hz
Power Consumption :	Approx. 27W
Operating Temperature :	5°C to 40°C
Television System :	CCIR : 625 lines, 50 fields PAL and OST color signal
Video Recording System :	2 rotary heads, helical scanning system Luminance : FM azimuth recording Color signal : Converted subcarrier phase shift recording
Audio Track :	1 track
Tape Format :	Tape width 12.7mm high density tape
RF Output Channel :	36 (±4) channel
Heads :	Video : 2 rotary heads Audio/Control : 1 stationary head Erase : 1 full track erase
Input Level :	Video : VIDEO IN socket 1.0Vp-p, 75 ohm unbalanced Audio : AUDIO IN socket - 8 dB, 50K ohm unbalanced
Output Level :	Video : VIDEO OUT socket 1.0Vp-p, 75 ohm unbalanced Audio : AUDIO OUT socket - 6 dB, 1K ohm unbalanced
Weight :	5.2kg
Dimension :	385(W)x81.5(H)x334(D)mm

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HQ FEATURE

This video recorder is equipped with HQ (High Quality) recording capability. A built-in detail enhancer is used to boost the recorded signal for cleaner, sharper images and maximum picture quality in playback.

VPS FUNCTION

If the VCR is turned to a TV station transmitting the VPS signal, the VCR automatically takes any delay or extention of the program into account and can record the specified program.

KEY TO ABBREVIATIONS

A	AC	:Alternating Current
	A/C	:Audio/Control
	ACC	:Automatic Color Control
	AE	:Audio Erase
	AFC	:Automatic Frequency Control
	AFT	:Automatic Fine Tuning
	AFT DEF	:Automatic Fine Tuning Defeat
	AGC	:Automatic Gain Control
	AMP	:Amplifier
	ANT	:Antenna
	APC	:Automatic Phase Control
	ASB	:Assemble Mode
	AT	:All Time
B	BGP	:Burst Gate Pulse
	BOT	:Beginning of Tape
	B.P.F	:Band Pass Filter
	B/W	:Black & White
C	CASE	:Cassette
	CAP	:Capstan
	CARR	:Carrier
	CCD	:Charged Coupled Device
	CH	:Channel
	CLK	:Clock
	CLOCK(SY-SE)	:Clock(Syscon to Servo)
	CONV	:Converter
	CPM	:Capstan Motor
	CTL	:Control
	CYL	:Cylinder
	CYL-M	:Cylinder Motor
	CYL SENS	:Cylinder Sensor
D	DATA(SY-SE)	:Data(Syscon to Servo)
	DC	:Direct Current
	DD UNIT	:Direct Drive Motor Unit
	DET	:Detection, Detector
	DEV	:Deviation
E	EE	:Electric to Electric
	EF	:Emitter Follower
	EOT	:Ending of Tape
	EQ	:Equalizer
	EXT	:External
F	FBC	:Feed Back Clamp
	FE	:Full Erase
	FG	:Frequency Generator
	FL SW	:Front Loading Switch
	FM	:Frequency Modulation
	FSC	:Frequency Sub Carrier
	FWD	:Forward
G	GND	:Ground
H	H.P.F	:High Pass Filter
I	IF	:Intermediate Frequency
	INST	:Insert Mode
	INT	:Interrupt
	INV	:Inverter
L	LED	:Light Emitting Diode
	LIMIT AMP	:Limiter Amplifier
	LM	:Loading Motor
	LOAD	:Loading
	L.P.F	:Low Pass Filter
	LUMI	:Luminance
M	MM	:Monostable Multivibrator
	MOD	:Modulator, Modulation
	MS SW	:Mech State Switch
N	NC	:Non Connection
O	OSC	:Oscillator
	OR EQ	:Or Equivalent
P	PB	:Playback
	PB CTL	:Playback Control
	P.CON	:Power Control
	PD	:Phase Detector
	PG	:Phase Generator
	PWM	:Pulse Width Modulation
	PWM TV	:Pulse Width Modulated Tuning Voltage
R	REC	:Recording
	REC ST	:Recording Start
	REEL BRK	:Reel Brake
	REEL S	:Reel Sensor
	REG	:Regulator, Regulated
	REW	:Rewind
	RF	:Radio Frequency
S	S.CLK	:Serial Clock
	S.COM	:Sensor Common
	S.DATE IN	:Serial Date Input
	S.DATE OUT	:Serial Date Output
	SEG	:Segment
	SER	:Search Mode
	SI	:Serial Input
	SIF	:Sound Intermediate Frequency
	SO	:Serial Output
	SP	:Standard Play
	STB	:Serial Strobe
	SW	:Switch
	SYNC SEP	:Sync Separator, Separation
T	TR	:Transistor
	TRACK VR	:Tracking Variable Resistor
	TRIC PB	:Trick Playback
	TP	:Test Point
U	UNREG	:Unregulated
V	VCO	:Voltage Controlled Oscillator
	VIF	:Video Intermediate Frequency
	VP	:Vertical Pulse, Voltage Display
	VR	:Variable Resistor
	V-SYNC	:Vertical-Synchronization
	VT	:Voltage Tuning
Y	Y/C	:Luminance/Chrominance

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or disuse may cause transformation and aging of rubber parts.

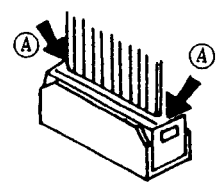
Parts Name \ Time	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Full Erase Head	□	□	□	□	□	Clean those parts in contact with the tape.
Audio Control Head	□	□	□	□	□	
Loading Belt		□		○		Clean the rubber, and parts which the rubber touches.
Reel Belt		□		○		
Front Loading Belt		□		○		
Pinch Roller	□	□	□	□	□○	
Capstan DD Unit					○	
Loading Motor					○	
Tension Band					○	
Capstan Shaft	□	□	□	□	□	
Impedance Roller	□	□	□	□	□	Replace when rolling becomes abnormal.
Tape Running Guide Post	□	□	□	□	□	
Cylinder Unit	□	□○	□	□○	□○	※

○ : Replace
□ : Clean

※ Clean the upper drum (especially the video heads) in the direction or drum rotation using a thick, textured cloth with a high quality methyl alcohol. Avoid wiping vertically as this may cause damage to the video heads.

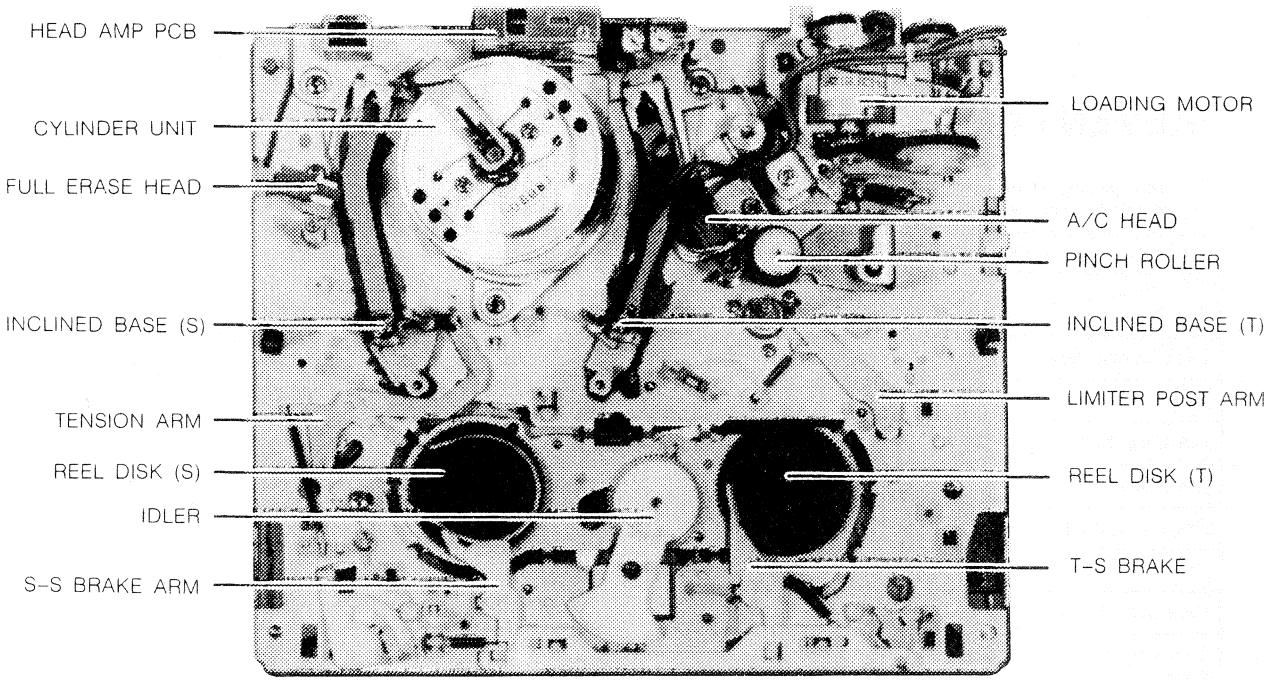
HOW TO REMOVE AND INSTALL RIBBON WIRE IN CASE OF DISCONNECTION.

1. To remove the wire, simultaneously press both parts indicated by arrow Ⓐ .
2. To install the wire, do not press the parts indicated by arrow Ⓐ , but insert the wire into the connector.

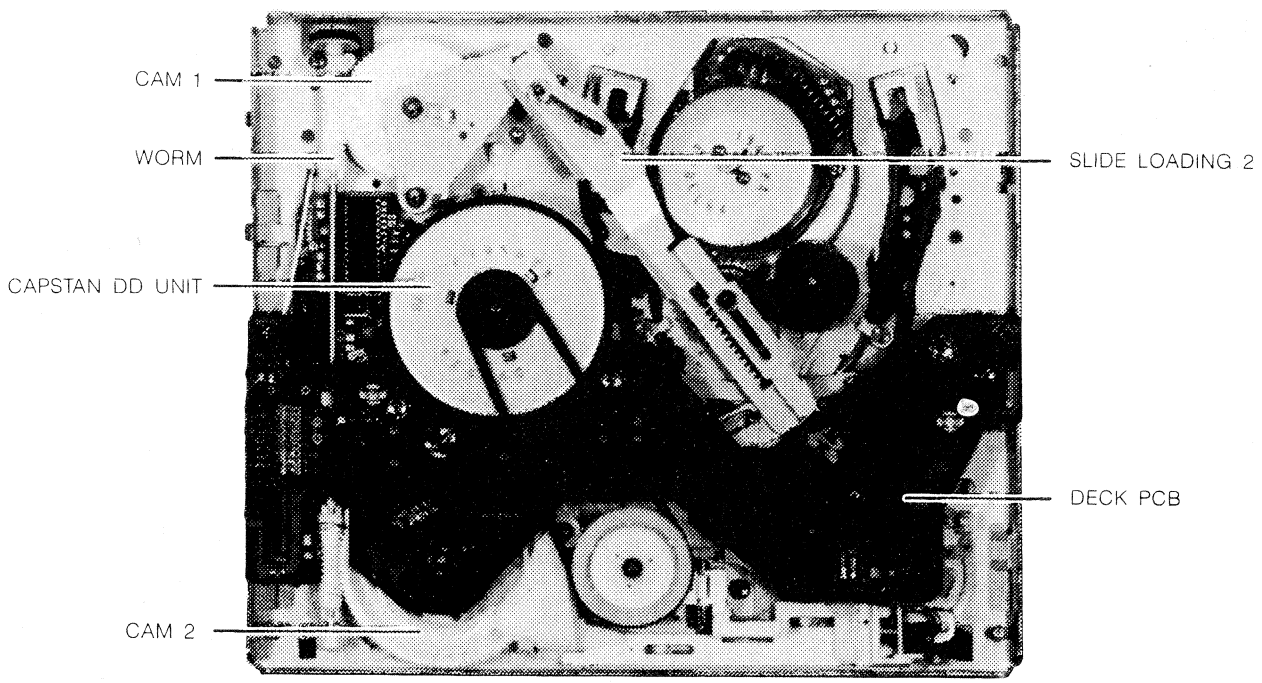


DECK PARTS LOCATION

(TOP VIEW)



(BOTTOM VIEW)



MECHANICAL ADJUSTMENTS

1. BEFORE MECHANICAL ADJUSTMENT

CAUTION

Inferior silicon grease can damage IC's and transistors.
When replacing an IC or transistor, use only specified silicon grease (YG6260M).
Remove all the old silicon before applying new silicon.

PRECAUTION

Remove the following items before adjusting the deck and starting work.

1. Remove 2 screws and remove the TOP CABINET.
2. Remove 5 screws and remove the BOTTOM CABINET.
3. Remove the FRONT CABINET.
4. Remove the STAGE. **(Refer to item 1-1)**

Read the following NOTED items before starting work.

* Remove the stage when replacing the deck parts.
* Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the stage. (Do not place an object which weighs over 500g.)
* When you activate the deck without the stage, short Q1101(BOT SENSOR). EOT/BOT sensor will not function in this condition. Be sure to return the deck to it's original condition after repairs are completed.

1-1: HOW TO REMOVE AND INSTALL STAGE

REMOVAL **(Refer to Fig. 1)**

1. Remove the pulley of loading motor box and the loading motor belt hooked on the stage worm.
2. Remove the screws ① and ② in the EJECT mode.
3. Push the stage in the direction of the arrow and lift up to remove the stage.

NOTE

When you remove and install the stage, be careful not to touch the guide pin or cylinder head.

INSTALLATION

Install new stage in the reverse steps of REMOVAL.

NOTE

When you re-install the stage, it should be in the EJECT mode.

CONFIRMATION

1. The front loading operation works well when turning on the power and when inserting a cassette tape into the stage.
2. Each function works well when pressing the PLAY, EJECT and REC buttons.

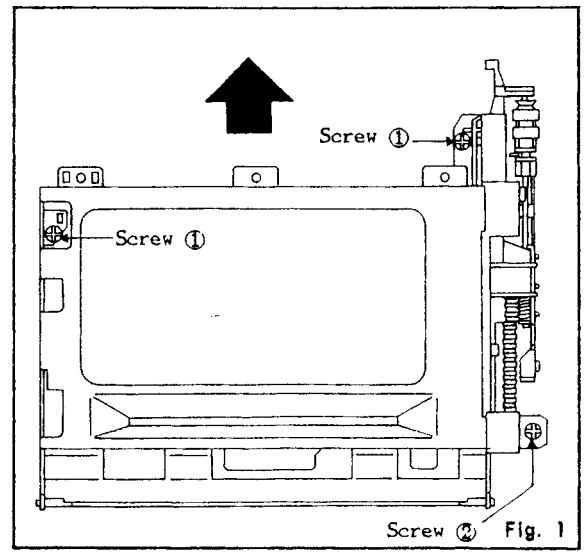


Fig. 1

2. REPLACEMENT OF MAIN PARTS

2-1: REEL DISK

REMOVAL **(Refer to Fig. 2-1)**

(Supply Reel Disk)

1. Remove the actuator sub brake.
2. Remove the SS brake spring, then remove the SS brake arm.
3. Remove the tension band from the main chassis.
4. Remove the polyslider washer ①.
5. Pull the supply reel disk ③ upward and replace it.

(Take-Up Reel Disk)

1. Remove the actuator sub brake.
2. Remove the TS brake spring, then remove the TS brake.
3. Remove the polyslider washer ④.
4. Pull the take-up reel disk ⑤ upward and replace it.

NOTE

The height adjustment washers ② and ⑥ are sometimes attached to the back of the reel disk.

INSTALLATION

(Supply/Take-Up Reel Disk)

1. Clean the reel disk shaft and put in height adjusting washers ② and ⑥.
2. Install new reel disk.
3. Adjust the height of the reel disk. **(Refer to item 3-5)**
4. Pull out the new supply/take-up reel disk. After oiling (Cosmo Oil Hydro HV100) the reel disk shaft, install the new supply/take-up reel disk again.
5. Install the supply/take-up reel disk in the reverse steps of REMOVAL.

MECHANICAL ADJUSTMENTS

NOTE

1. Be careful not to damage the tension band at the time of removal and installation.
2. Be careful not to scratch the reel disk shaft with the polyslider washer or the tool at the time of removal and installation.
3. After installation, adjust and confirm the tension post position. **(Refer to Item 3-6)**

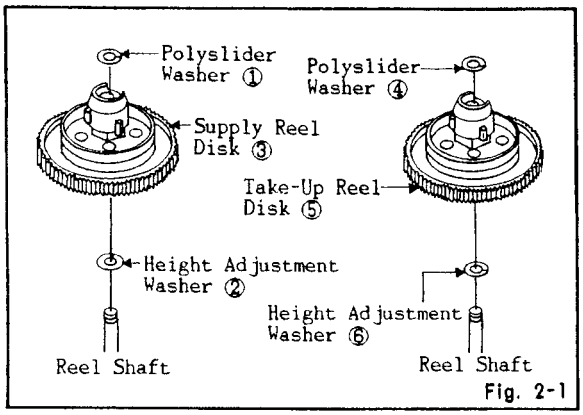


Fig. 2-1

2-2: A/C HEAD

REMOVAL **(Refer to Fig. 2-2)**

Remove the screws ①, ② and ③.

INSTALLATION

Install new A/C head in reverse steps of REMOVAL.

NOTE

Do not touch the heads by any means when replacing the A/C head.

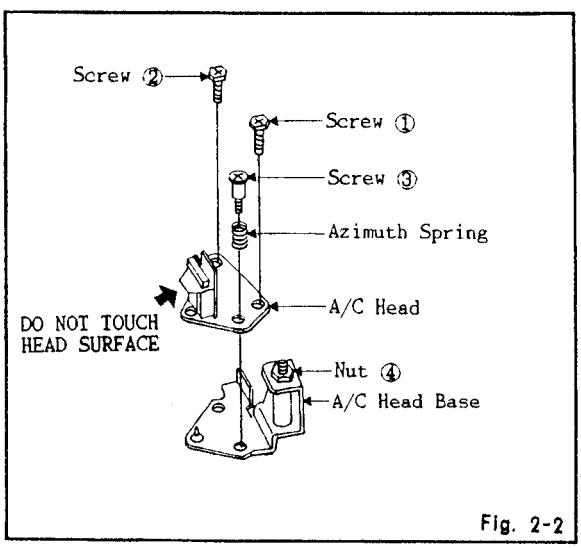


Fig. 2-2

2-3: UPPER DRUM

REMOVAL **(Refer to Fig. 2-3)**

1. Remove the screw ② which holds the earth brush .
2. Desolder the lead wires ① from the upper drum assembly.
3. Be sure to use gloves, avoid the surface of cylinder unit. Hold down the upper drum preventing it from turning, then remove the screws ④, and remove the upper drum with the upper drum fixing jig **(JG031)**.

INSTALLATION

Install new upper drum in the reverse steps of REMOVAL.

NOTE

1. Do not apply excessive pressure to screwdriver.
2. Before installing, confirm that there are no scratches or dust on the disk, upper drum surface and drum head surface.
3. When setting, take care not to let any dust or dirt go into the clearance between disk and upper drum.
4. Do not touch the surface of the cylinder head.
5. Check the adjustment of tape running. **(Refer to Item 4-6)**
6. After replacement confirm the following adjustments.

a. ELECTRICAL ADJUSTMENTS : ITEM 2-1
b. ELECTRICAL ADJUSTMENTS : ITEM 2-2
c. ELECTRICAL ADJUSTMENTS : ITEM 2-3
d. MECHANICAL ADJUSTMENTS : ITEM 4-3

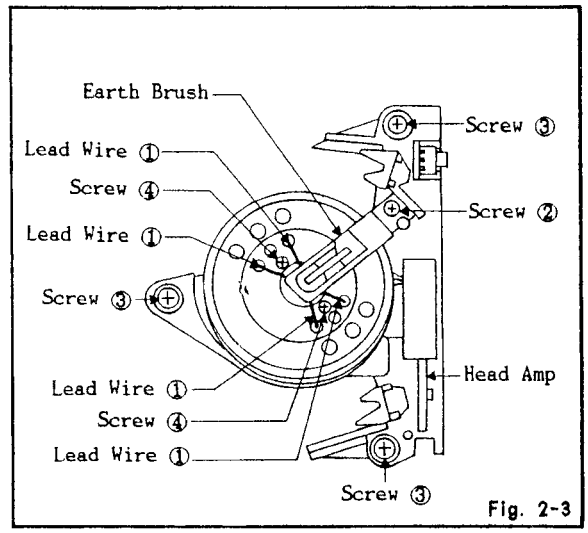


Fig. 2-3

MECHANICAL ADJUSTMENTS

2-4: CYLINDER UNIT

REMOVAL **(Refer to Fig. 2-3)**

1. Remove the transistor PCB. **(Refer to Item 2-9)**
2. Disconnect the connector (CP4102, 8 pin) from the head amp PCB.
3. Remove the screws ③, then remove the cylinder unit from the main chassis.
4. Disconnect the connector of the cylinder motor.

INSTALLATION

Install new cylinder unit in reverse steps of REMOVAL.

NOTE

1. Do not touch the surface of the cylinder head.
2. After replacement confirm the following adjustments.

a. ELECTRICAL ADJUSTMENTS : ITEM 2-1
b. ELECTRICAL ADJUSTMENTS : ITEM 2-2
c. ELECTRICAL ADJUSTMENTS : ITEM 2-3
d. MECHANICAL ADJUSTMENTS : ITEM 4-3

2-5: TENSION BAND

REMOVAL **(Refer to Fig. 2-4)**

1. Remove the actuator sub brake.
2. Remove the SS brake spring, then remove the SS brake arm.
3. Remove the screw ①.
4. Remove the tension band from the tension arm.

INSTALLATION

Install new tension band in reverse steps of REMOVAL.

NOTE

1. Install the tension band without twisting it.
2. Adjust the placement of the tension post. **(Refer to Item 3-6)**
3. Adjust and confirm the back tension during playback. **(Refer to Item 3-7)**

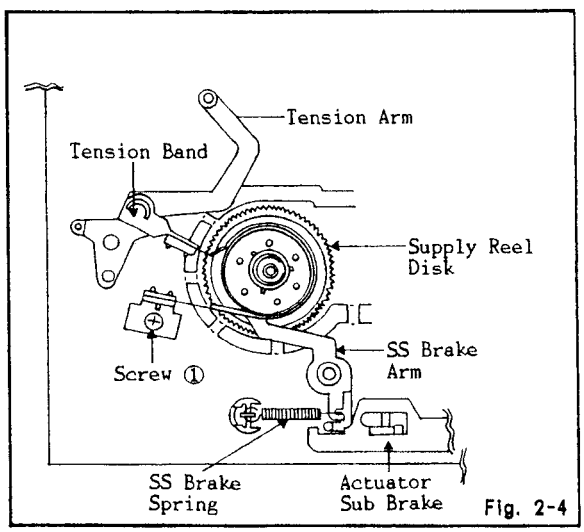


Fig. 2-4

2-6: LOADING MOTOR / LOADING MOTOR BELT

REMOVAL **(Refer to Fig. 2-5)**

1. Remove the 2 wires soldered to the loading motor.
2. Remove the lead wire in the hook of the loading motor box.
3. Remove the loading motor belt ②.
4. Remove the screw ①, then remove the loading motor box.
5. Remove the loading motor belt ③.
6. Remove the screw ④, then lift the loading motor upward.

INSTALLATION

Install new loading belt in reverse steps of REMOVAL.

NOTE

1. Clean the pulley when replacing loading belt.
2. Replace it while in the EJECT mode.
3. Avoid getting grease on the loading belt.

CHECK AFTER INSTALLATION

1. Check if strange sound is heard in PLAY mode.
2. Check if P2 post and P3 post are fitted to the post stopper.
3. Check if P2 post and P3 post are completely returned in EJECT mode.

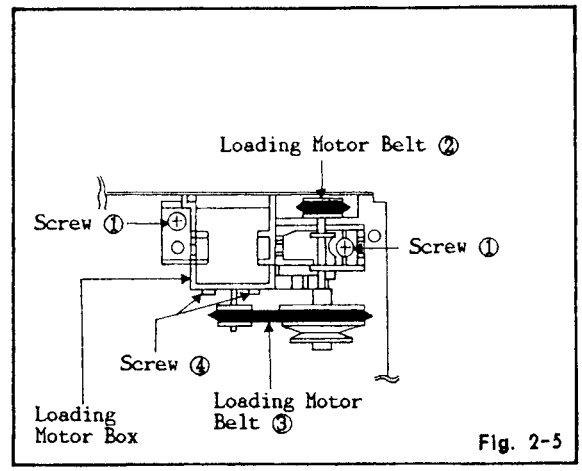


Fig. 2-5

2-7: PINCH ROLLER

REMOVAL **(Refer to Fig. 2-6)**

1. Remove the pinch roller arm spring.
2. Remove the polyslider washer ①.
3. Remove the pinch roller.

INSTALLATION

Install new pinch roller in reverse steps of REMOVAL.

NOTE

1. Be careful not to bend the pinch roller arm in removal and installation.
2. Do not touch the pinch roller. (Use gloves.)

CHECK AFTER INSTALLATION

Check if the tape is running normally in PLAY mode.

MECHANICAL ADJUSTMENTS

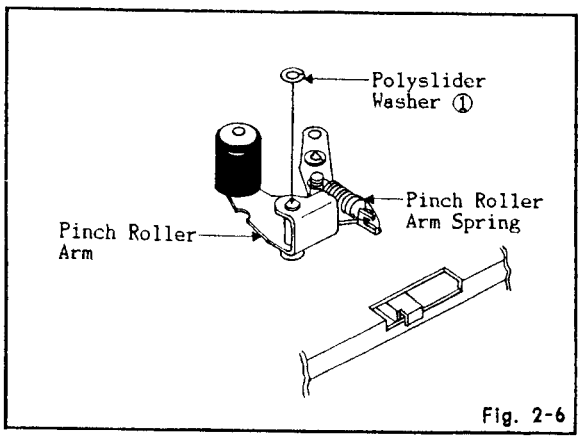


Fig. 2-6

2-8: CAPSTAN DD UNIT

REMOVAL

1. Disconnect the connector (CP2003 17 pin) from the main PCB.
2. Disconnect the connector (CP4102 8 pin) of the head amp PCB and the connector (CP5001 5 pin, CP2001 2 pin) of the main PCB.
3. Remove the screw ①, unlock the hooks (3 positions) which have been connected to the main PCB. **(Refer to Fig. 2-7-A)**
4. Disconnect the connector (9 pin) of the capstan DD unit.
5. Disconnect the connector (6 pin) of the cylinder unit back side.
6. Remove the reel belt.
7. Remove the solder "A" positions, remove the screws ① and then remove the deck bottom PCB.
8. Remove the loading motor belt ②.
9. Remove the screw ④, then remove the bracket worm 3.
10. Pull the hook ③ in the direction of arrow, then remove the worm. **(Refer to Fig. 2-7-B)**
11. Remove the screws ①, then remove the capstan DD unit. **(Refer to Fig. 2-7-C)**
    (Be sure to support with hand under the capstan DD unit.)

INSTALLATION

Install new capstan DD unit in reverse steps of REMOVAL.

NOTE

1. Do not bend the limiter post.
2. Use the specified screw held to the DD unit.
3. Avoid getting grease on the reel belt.
4. Be sure to install in the EJECT position. **(Refer to Fig. 2-7-E, F)**
5. Install in the position where the capstan DD unit PCB gets up to the "B" position. **(Refer to Fig. 2-7-B)**
6. When installing the worm, be sure to unlock the hook ③ in the direction of arrow, and the cam 1 and cam 2 must be meshed smoothly. **(Refer to Fig. 2-7-B)**
7. When installing the deck bottom PCB, be sure to install the rotary switch in the EJECT position.
   The EJECT position is the point where the "A" tooth is aligned to the "B".
   (Refer to Fig. 2-7-D)

CHECK AFTER INSTALLATION

1. Check if tape running is normal in PLAY mode.
2. Check if FF/REW mode works normally.

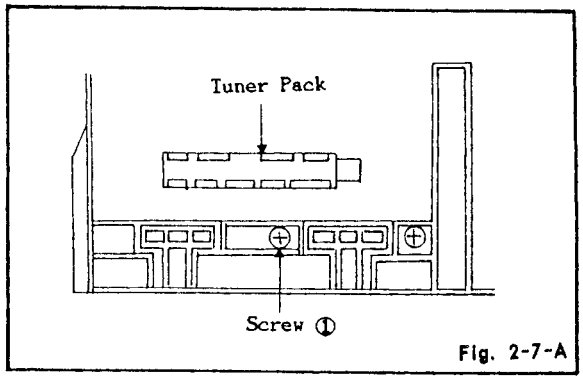


Fig. 2-7-A

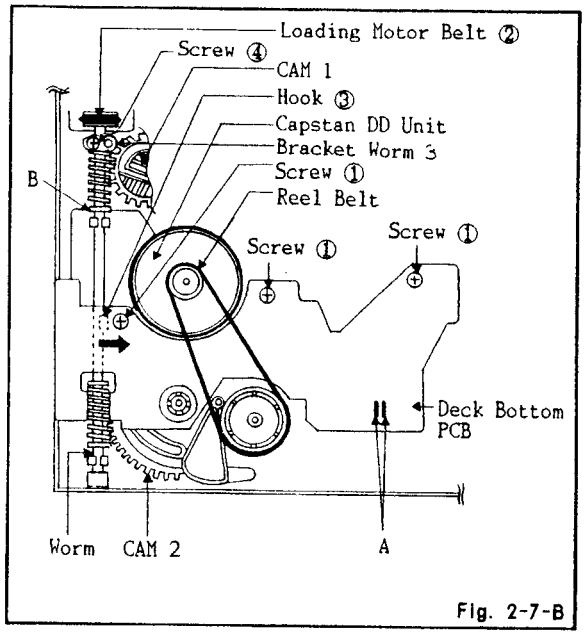


Fig. 2-7-B

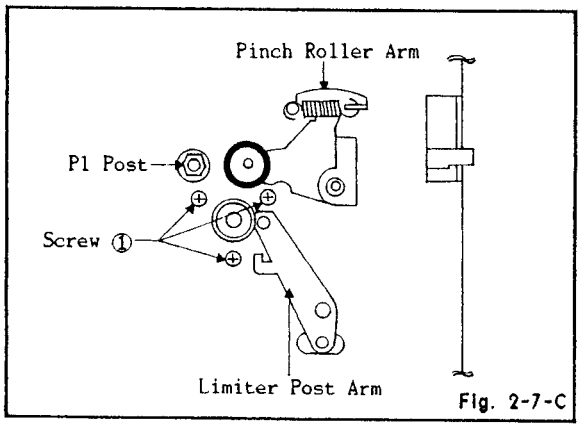


Fig. 2-7-C

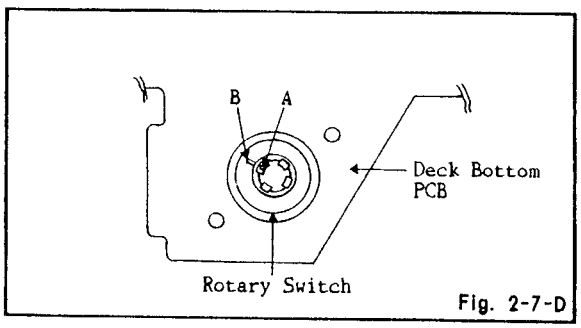


Fig. 2-7-D

MECHANICAL ADJUSTMENTS

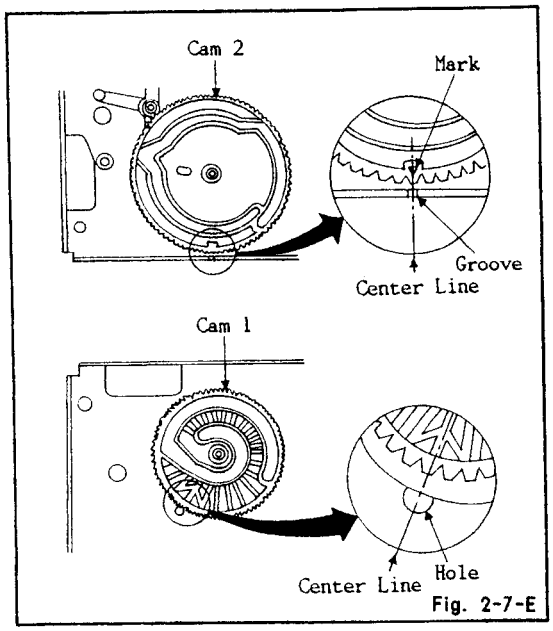


Fig. 2-7-E

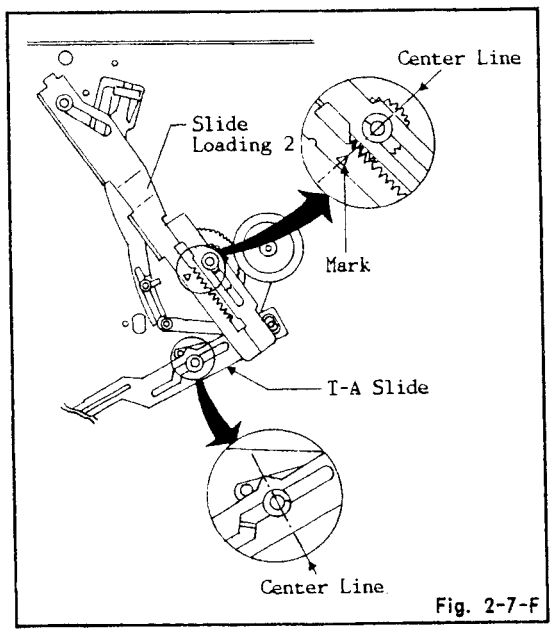


Fig. 2-7-F

2-9: TRANSISTOR PCB

REMOVAL

1. Insert a small flat-blade screwdriver into the transistor spring as shown in **Fig. 2-8.**
2. Hold both edges of the transistor PCB ("A" part) with your fingers and pull out the transistor PCB while turning the driver.

INSTALLATION

Install new transistor PCB in reverse steps of REMOVAL.

NOTE

1. The unit should be unplugged from the AC outlet.
2. Do not scratch or mar the cylinder.
3. Be careful not to split the transistor PCB.
4. If the transistor spring is broken when holding or removing the transistor PCB, replace with a new one.

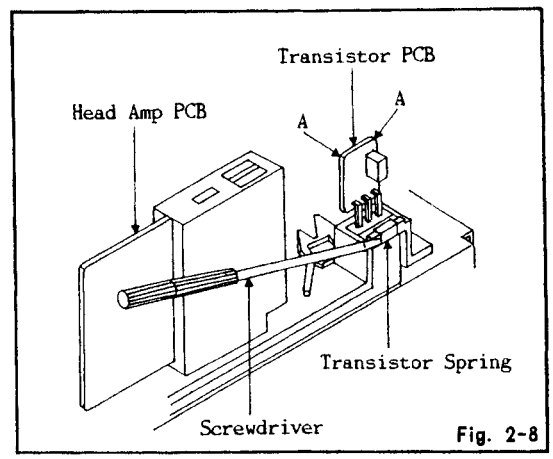


Fig. 2-8

3. CONFIRMATION AND ADJUSTMENT

3-1: CONFIRMATION OF FAST FORWARD TORQUE

CONFIRMATION

1. Set torque gauge (**JG002G**) on take-up reel disk, and place unit in FAST FORWARD mode. **(Refer to Fig. 3-1)**
2. Confirm that torque is more than 800g/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place. Push the FAST FORWARD button and the reel disk will begin to turn.

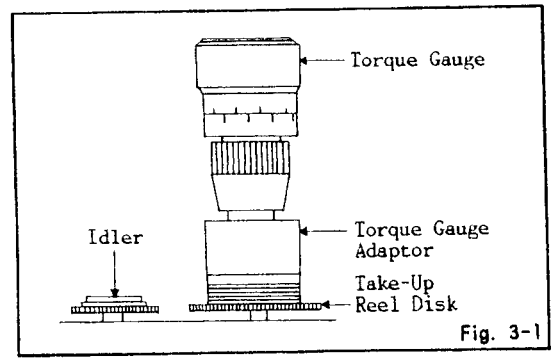


Fig. 3-1

3-2: CONFIRMATION OF REWIND TORQUE

CONFIRMATION

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge (**JG002G**) on supply reel Disk, and place the unit in REWIND mode. **(Refer to Fig. 3-2)**
3. Confirm that torque is more than 800g/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place. Push the FAST FORWARD button and the reel disk will begin to turn.

MECHANICAL ADJUSTMENTS

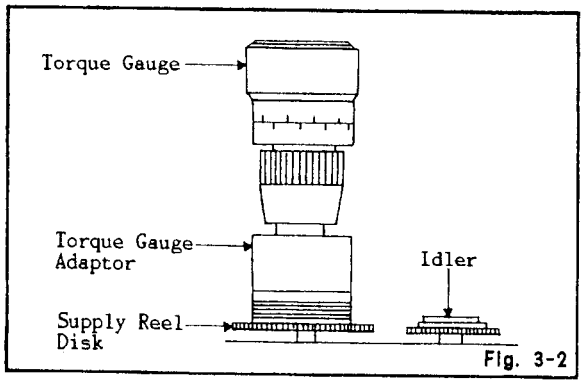


Fig. 3-2

3-3: CONFIRMATION OF PLAYBACK TAKE-UP TORQUE

CONFIRMATION

1. Set the torque gauge (**JG002F**) on the rewind reel disk, then check PB mode.
2. Make sure that the torque covers the range, 60~150g/cm.

3-4: CONFIRMATION OF REEL BRAKE TORQUE

CONFIRMATION **(Refer to Fig. 3-3-A)**

(Take-Up Reel Brake)

1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the take-up reel and turn it counter-clockwise.
3. Confirm that it is more than 200g/cm at that time.

CONFIRMATION **(Refer to Fig. 3-3-B)**

(Supply Reel Brake)

1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the supply reel and turn it clockwise.
3. Confirm that it is more than 200g/cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.

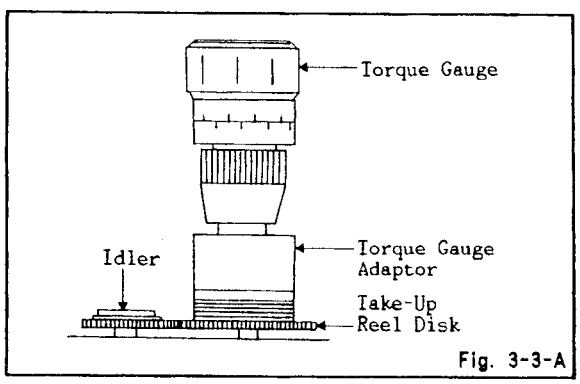


Fig. 3-3-A

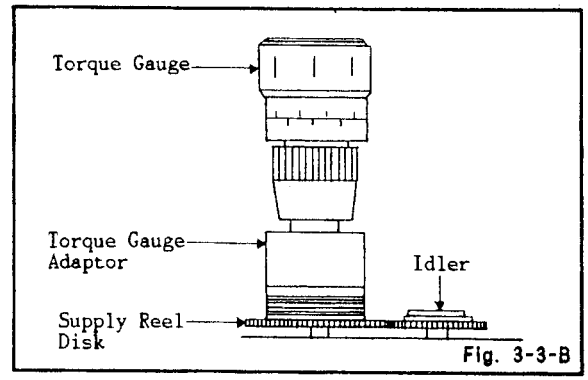


Fig. 3-3-B

NOTE

Refer to the table below for possible cause of problems when confirmation cannot be made for indicated items.

CONFIRMATION ITEM	CHECK POINT (REPLACEMENT)
3-1 3-2 3-3	Capstan belt may be stretched. Clutch may be worn out (if so, change reel disk.) Idler ass'y may be worn out.
3-4	Main brake belt may be worn out.

3-5: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

ADJUSTMENT

1. Turn the POWER SW ON.
2. Set the master plane (**JG022**) at mechanism framework, taking care not to scratch the drum, as shown in **Fig. 3-4-A.**
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig, (**JG024**) on the master plane and higher than "B" as shown in **Fig. 3-4-B.**
4. When it does not satisfy above items, adjust to less than 7.5±0.2mm with the height adjustment washer.

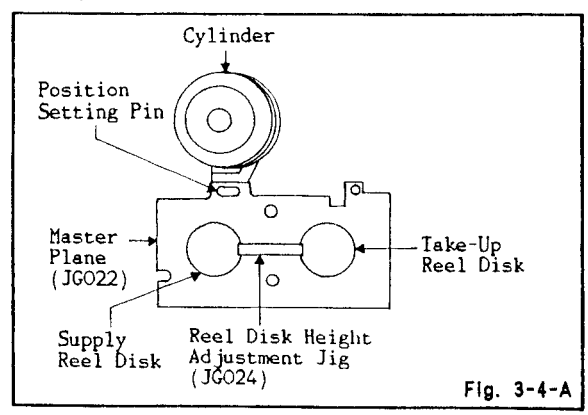


Fig. 3-4-A

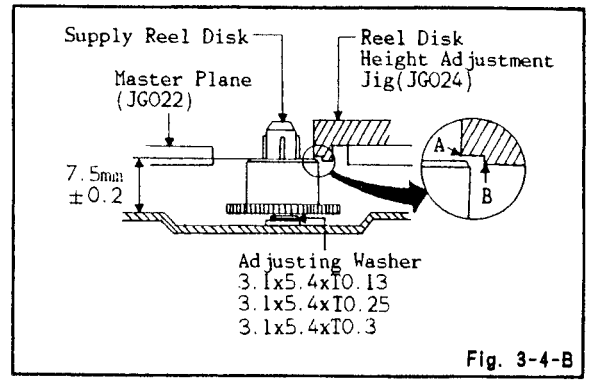


Fig. 3-4-B

MECHANICAL ADJUSTMENTS

3-6: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

CONFIRMATION

1. Turn on the power and set to the PLAY mode by using the tension post adjustment jig (**JG036**).
2. As soon as the guide rollers, L, R begin to draw the tape from the cassette, the tension post shall move to the left, thus loading will start.
3. Move the tension band adjuster to the "A" or the "B" direction to set tension post adjusting jig red line to the round of the tension post. **(Refer to Fig. 3-5)**
4. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.

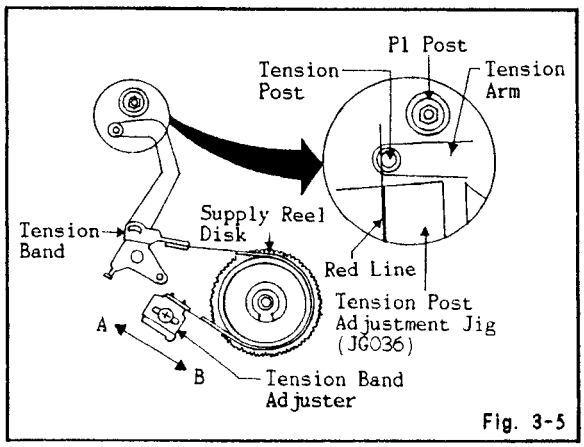


Fig. 3-5

3-7: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

CONFIRMATION

1. Load the **E-60** cassette tape recorded in standard speed mode
2. Set the unit in the PLAY mode.
3. Install the tentelometer as shown in **Fig. 3-6.** Confirm the value is within 25~35g/cm at this time.
4. Confirm the video tape is running tight on P1 post.
5. Confirm there is no sag or damage on edges of the tape both in the beginning and ending of the video tape.
6. Adjust when it does not satisfy the above items.
7. Set the tension arm spring to "B" direction when the tentelometer indicates less than 25g/cm. **(Refer to Fig. 3-6)**
   Set the tension arm spring to "A" direction when the tentelometer indicates more than 35g/cm. **(Refer to Fig. 3-6)**

NOTE

The tentelometer should not touch F/E Head, cylinder or other components in the tape path.

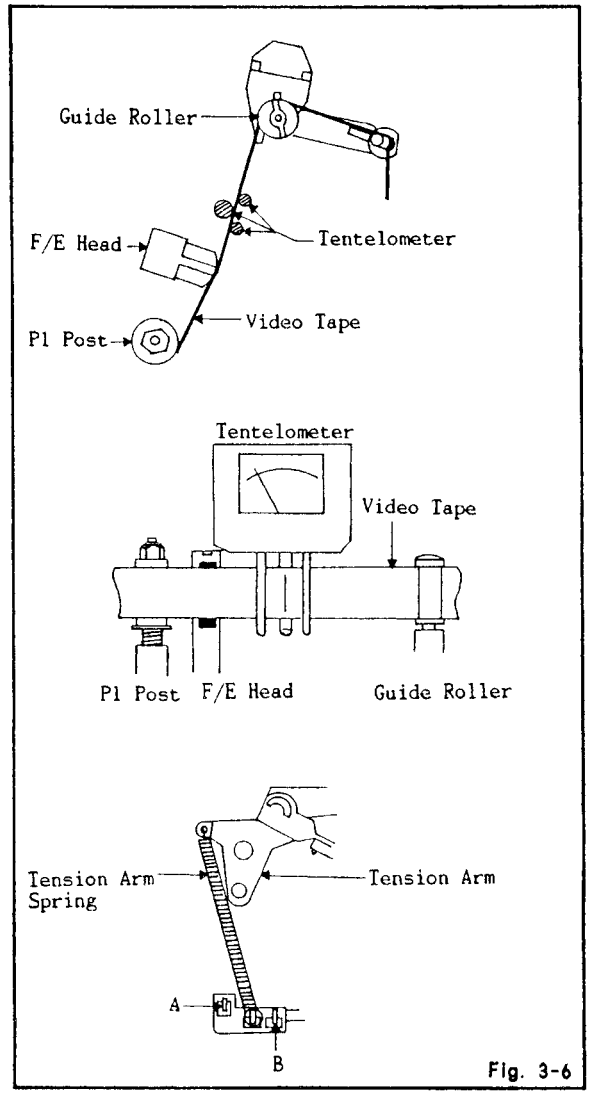


Fig. 3-6

4. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

Tape running is adjusted precisely at the factory. Normally, it is not necessary to make adjustments. It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.

4-1: P1 POST

ADJUSTMENT

1. Set to the EJECT mode. Install the P1/P4 post height adjustment jig (**JG035**) to the main chassis.
2. Adjust the P1 post with P1/P4 post height adjustment jig "A" part. **(Refer to Fig.4-1)**

4-2: P4 POST

ADJUSTMENT

1. Set to the EJECT mode. Install the P1/P4 post height adjustment jig (**JG035**) to the main chassis.
2. Adjust the P4 post with P1/P4 post height adjustment jig "B" part. **(Refer to Fig.4-1)**

MECHANICAL ADJUSTMENTS

NOTE

1. Adjust the guide roller. **(Refer to Item 4-3. Confirm there no crease on the edge of the tape).**
2. Do not move the nut.
3. Fix P4 post with screw lock.
4. Adjust the tape running. **(Refer to Item 4-6)**

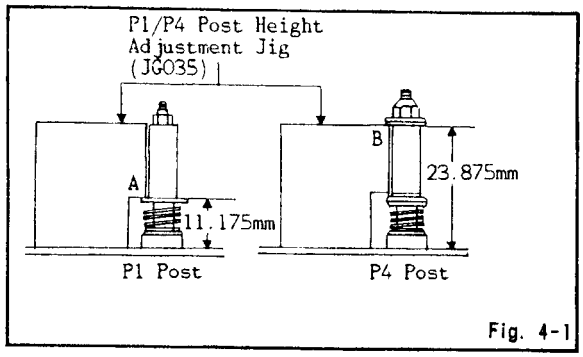


Fig. 4-1

4-3: GUIDE ROLLER

ADJUSTMENT

1. Switch on main power and then connect monitor output cord and video input cord to proper positions.
2. Insert the VHS adjustment tape **(JG001)** into the unit.
3. Connect CH-1 and CH-2 of oscilloscope to envelope output and to the test point of switching pulse, respectively.
4. Carry out this adjustment in PLAY mode.
5. Trigger with SW pulse and observe the envelope. **(Refer to Fig. 4-2-A)**
6. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control knob is turned. (Use the adjustment screwdriver **JG005**).
7. When the tracking control knob is turned (the point that the envelope waveform starts to reduce), adjust the envelope so that its A:B ratio is better than 10:7. **(Refer to Fig. 4-2-B)**
8. Adjust the PB switching position **(ELECTRICAL ADJUSTMENS : ITEM 2-1)** in the PLAY mode.

NOTE

After adjustment, confirm and adjust A/C head tilt. **(Refer to Item 4-4)**

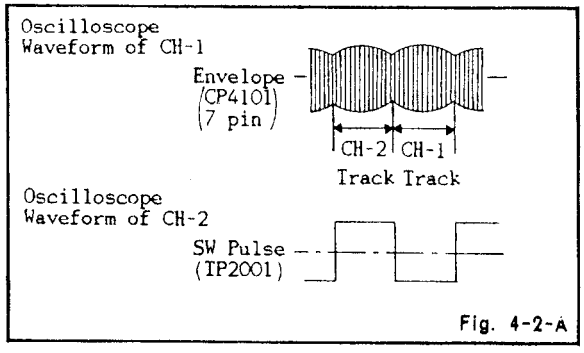


Fig. 4-2-A

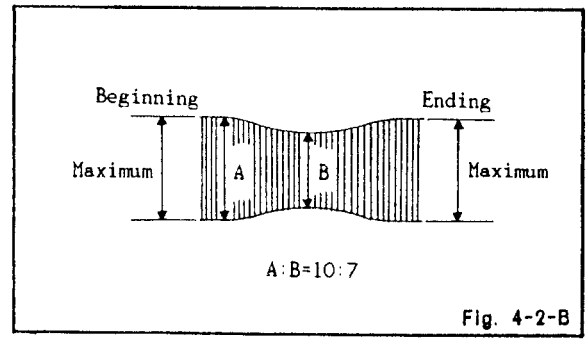


Fig. 4-2-B

4-4: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

ADJUSTMENT

When the tape is running abnormally, perform the following adjustments.

1. Check the tape running condition with the unit in the PLAY mode using the **E-60** tape.
2. Confirm that there is no crease on the tape between the guide post and guide roller(R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and guide post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. Do not move the guide post. **(Refer to Fig. 2-2)**

4-5: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

ADJUSTMENT

1. Playback a VHS adjustment tape **(JG001)** and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the height of the A/C head. Adjust the height so that the audio output becomes maximum. **(Refer to Fig. 2-2)**
3. Adjust the nut ④. **(Refer to Fig. 2-2)** until the height of the A/C head reaches the position against the tape as shown in **Fig. 4-3.**

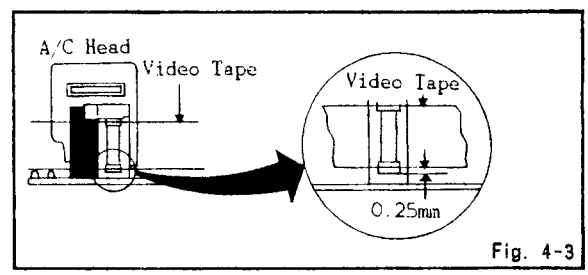


Fig. 4-3

4-6: TAPE RUNNING ADJUSTMENT

1. Adjust the height of reel disk. **(Refer to Item 2-1)**
2. Adjust the P1 post, P4 post. **(Refer to Item 4-1, 2)**
3. Confirm and adjust tension post position. **(Refer to Item 3-6)**
4. Adjust the guide roller. **(Refer to Item 4-3)**
5. Adjust the A/C head height and azimuth. **(Refer to Item 4-5)**
6. Adjust the A/C head tilt. **(Refer to Item 4-4)**
7. Set the tracking control to the center position. Turn X-nut adjustment screwdriver (JG021) until the envelope appears maximum.

ELECTRICAL ADJUSTMENTS

1. BEFORE ELECTRICAL ADJUSTMENT

These are adjustments when you replace electric parts or PCB ass'y.
When you repair the electric circuit, please read these adjustments.

1-1: Prepare the following measurement tools for the electrical adjustment.

1. Oscilloscope (2 channel type)
2. AC Voltmeter
3. Sweepmarker Generator
4. AFT Adjustment Oscillator
5. VIF Unit
6. Audio Oscillator
7. Frequency Counter
8. DC Voltmeter
9. Spectrum Analyzer

2. ADJUSTMENT PROCEDURE

2-1: PB. SWITCHING POSITION

CONDITIONS

MODE - PLAYBACK
Input Signal - Standard Test Tape

NOTE

Tracking control should be set at click point.

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP2001** and CH-2 to **TP4201.**
2. Playback the tape.
3. Adjust **VR2001** so that the waveform of the oscilloscope measures 6.5±0.5(H) at both leading and trailing edges.
(Refer to Fig. 2-1-A, B)

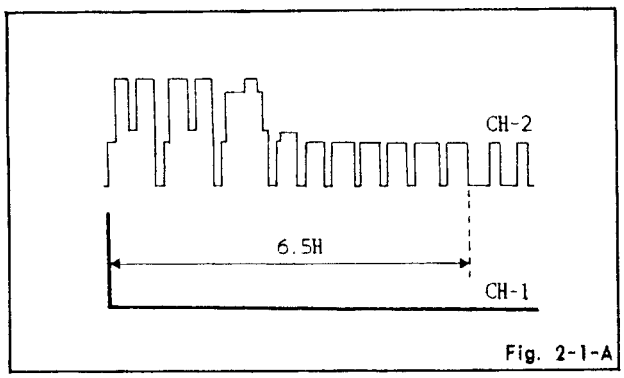


Fig. 2-1-A

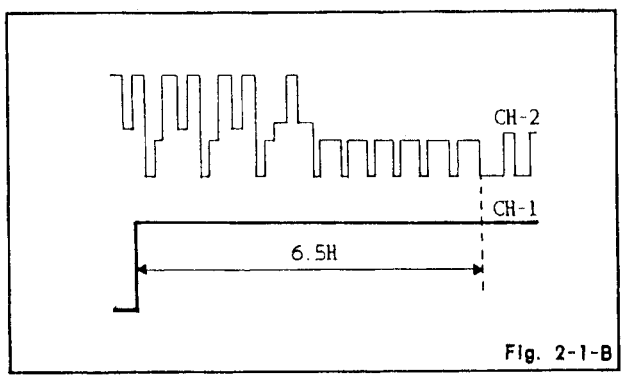


Fig. 2-1-B

2-2: TRACKING FIX

CONDITIONS

MODE - PLAYBACK
Input Signal - Standard Test Tape

NOTE

Tracking control should be set at click point.

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP2001** and CH-2 to **TP2003.**
2. Playback the tape.
3. Adjust **VR2002** so that the "T" portion measures -1.0±0.3msec.
(Refer to Fig. 2-2)

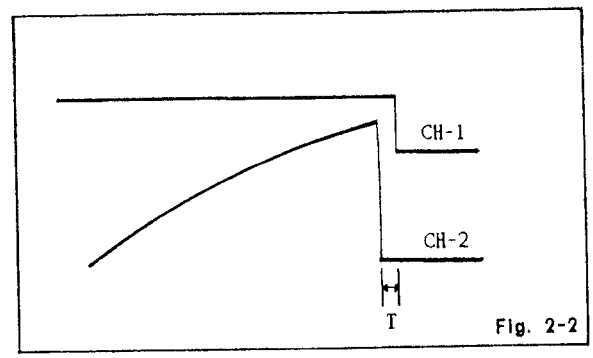


Fig. 2-2

2-3: PLAYBACK LUMINANCE LEVEL

CONDITIONS

MODE - PLAYBACK
Input Signal - Color Bar Test Tape

NOTE

Video out of the unit should be terminated with 75 ohm load.

INSTRUCTIONS

1. Connect the oscilloscope to **TP4201.**
2. Playback the tape.
3. Adjust **VR4003** so that the signal becomes 1.0±0.05Vp-p as shown in **Fig. 2-3.**

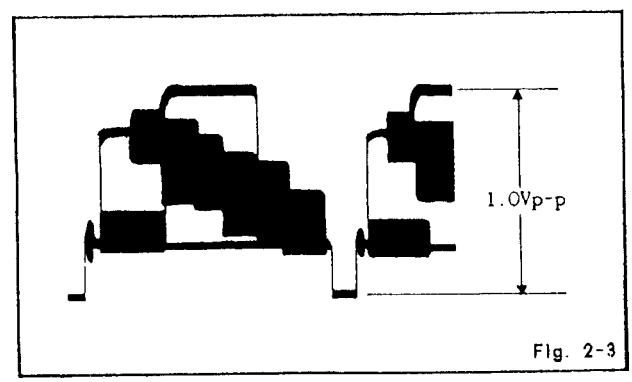


Fig. 2-3

ELECTRICAL ADJUSTMENTS

2-4: NOISE CANCEL

CONDITIONS

MODE - PLAYBACK
Input Signal - Color Bar Test Tape

INSTRUCTIONS

1. Connect CH-1 of the oscilloscope to **TP4003** and CH-2 on the oscilloscope to **TP4004.**
2. Reverse the waveform for CH-2 with an inverter and put both the waveforms for CH-1 and CH-2 together by pressing the ADD SW on the oscilloscope.
3. Adjust the **VR4005** so that the waveform of CH-1 is straight as shown in **Fig. 2-4.**

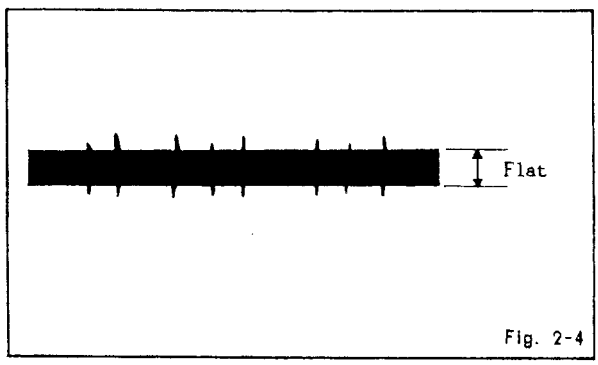


Fig. 2-4

2-5: E-E LEVEL

CONDITIONS

MODE - STOP
Input Signal - PAL Color Bar

NOTE

Video out of the unit should be terminated with 75 ohm load.

INSTRUCTIONS

1. Input the color bar signal to the **VIDEO IN.**
2. Connect the oscilloscope to **TP4005.**
3. Adjust **VR4004** so that the waveform measures 0.53±0.01Vp-p. **(Refer to Fig. 2-5)**

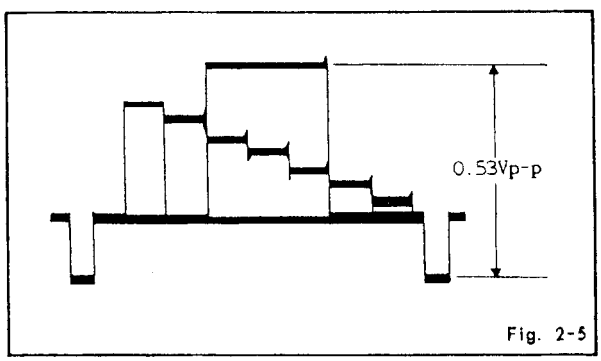


Fig. 2-5

2-6: CARRIER AND DEVIATION

CONDITIONS

MODE - STOP
Input Signal - PAL Color Bar

INSTRUCTIONS

1. Input the color bar signal to the **VIDEO IN.**
2. Connect **TP4001** to the input terminal on the spectrum analyzer, then adjust 3.8MHz and 4.8MHz as shown in **Fig. 2-6** with **VR4001** and **VR4002.**

VR4001 (CARRIER)
VR4002 (DEVIATION)

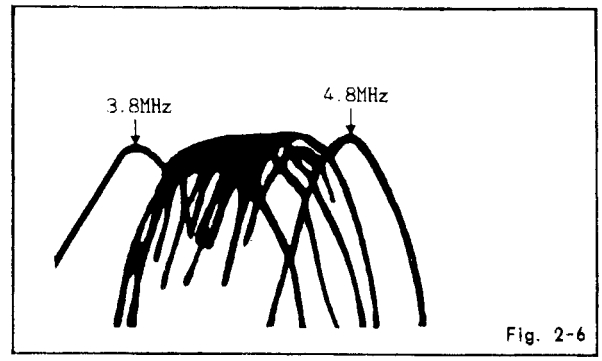


Fig. 2-6

2-7-A: SECAM IDENTIFICATION (1)

CONDITIONS

MODE - RECORD
Input signal - SECAM RF signal

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP4201** and CH-2 to **TP3702.**
2. Adjust **L3702** so that peak of waveform "A" and leading edge of video signal of waveform "B" may become same as shown in **Fig. 2-7.**

2-7-B: SECAM IDENTIFICATION (2)

CONDITIONS

MODE - RECORD
Input signal - SECAM RF signal

INSTRUCTIONS

1. Connect the oscilloscope to **TP3701.**
2. Receive SECAM RF signal at 33dB.
3. At this time, adjust **TP3701** to High Level with **VR3701**
4. Next, check that the **TP3701** will indicate Low Level with adjusting the output level to 31dB.
5. Receiving the PAL signal, check that the **TP3701** will indicate Low Level regardless of output strength.

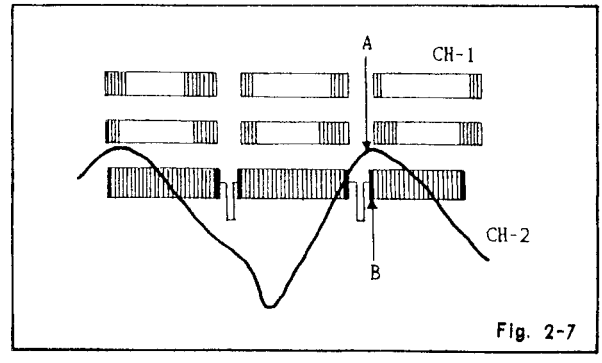


Fig. 2-7

ELECTRICAL ADJUSTMENTS

2-8: RECORD CURRENT

CONDITIONS

MODE - RECORD(SP MODE)
Input Signal - PAL Color Bar

INSTRUCTIONS

1. Input the color bar signal to the **VIDEO IN.**
2. Connect CH-1 on the oscilloscope to **TP4101** and connect the GND side to **TP4102.** Connect CH-2 on the oscilloscope to **TP4201.** Reduce REC.-Luminance signal factors by turning **VR4102** fully counter-clockwise.
3. Adjust **VR4101** so that the cyan level becomes 30±2mVp-p as shown in **Fig. 2-8-A.**
4. Adjust **VR4102** so that the horizontal sync level becomes 120±5mVp-p as shown in **Fig. 2-8-B.**

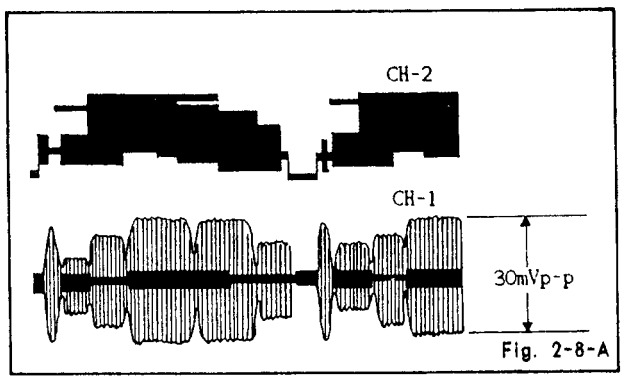


Fig. 2-8-A

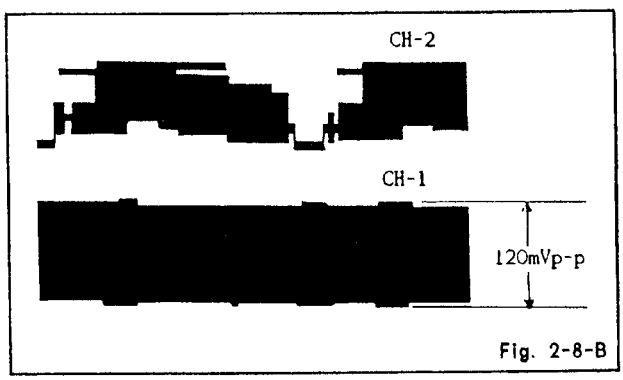


Fig. 2-8-B

2-9: AUDIO BIAS CURRENT

CONDITIONS

MODE - RECORD
Input Signal - No Signal

INSTRUCTIONS

Connect the AC voltmeter to the arrow point, then adjust the voltage to 3.3±0.1mVrms with **VR5002.(Refer to Fig. 2-9)**

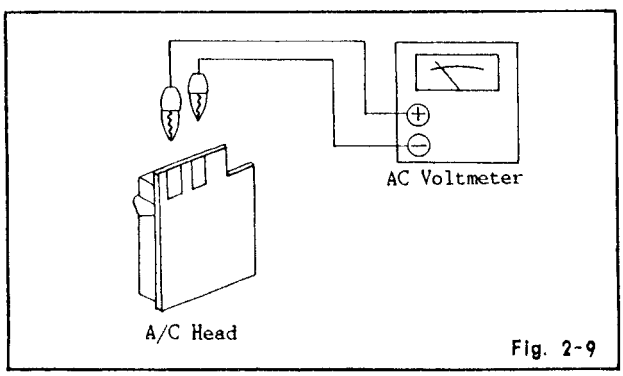


Fig. 2-9

2-10: PLAYBACK AUDIO LEVEL

CONDITIONS

MODE - Self(RECORD and PLAYBACK)(SP MODE)
Input Signal - 1KHz 300mVrms, Audio Signal
Video Signal : PAL Color Bar

INSTRUCTIONS

1. Connect the AC voltmeter to **AUDIO OUT,** which is terminated with 47K ohm resistor.
2. Record and then playback the audio signal as specified.
3. Adjust **VR5001** so that the playback output may become 390±10mVrms.

2-11: CLOCK

CONDITIONS

MODE - STOP
POWER ON
CLOCK SET

INSTRUCTIONS

1. Connect the frequency counter to **TP601.**
2. Adjust **TC601** so that the value of frequency counter is 1048576±1Hz.

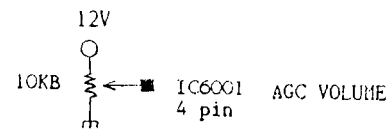
2-12-A VIDEO IF

CONDITION

MODE - STOP

INSTRUCTIONS

1. Connect the output of sweepmarker generator to **pin 7 side on IC6001 of resistor R6030 (1 Kohm).**



2. Adjust **L6004** so that output waveform of **pin 16 on IC6001** may become as shown in **Fig. 2-10-A.**

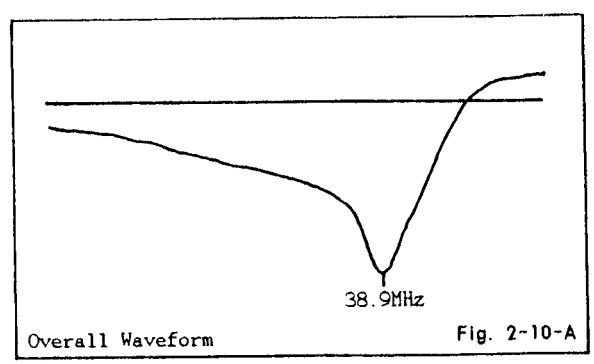


Fig. 2-10-A

ELECTRICAL ADJUSTMENTS

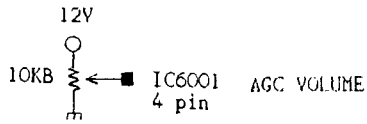
2-12-B: CHECKING VIDEO IF OVERALL

CONDITION

MODE - STOP

INSTRUCTIONS

1. Connect the output of sweepmarker generator to the tuner pack TP.



2. Terminate with a 100 ohm resistor between **pins 13 and 14 on IC6001.**
3. Make sure that the output of waveform of **pin 16 on IC6001** may become as shown in **Fig. 2-10-B.**

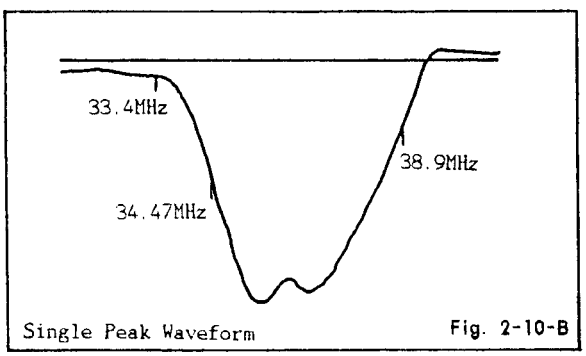


Fig. 2-10-B

2-12-C: TRAP

CONDITION

MODE - TUNER

INSTRUCTIONS

1. Connect the **pin 1 of connector CP6001** to the output of the sweepmarker generator.
2. Connect the saw filter (CF6001) side of the condenser, to the oscilloscope. (Use the detector as prob.) **(Refer to Fig. 2-10-C)**
3. Adjust **L6014** until the marker of 32.4MHz will be same as shown in **Fig. 2-10-D.**

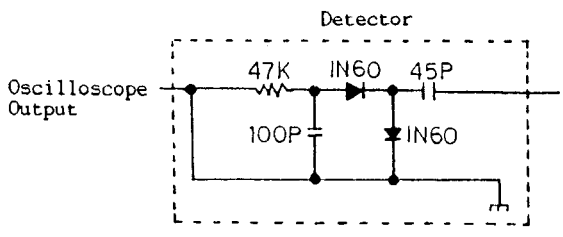


Fig. 2-10-C

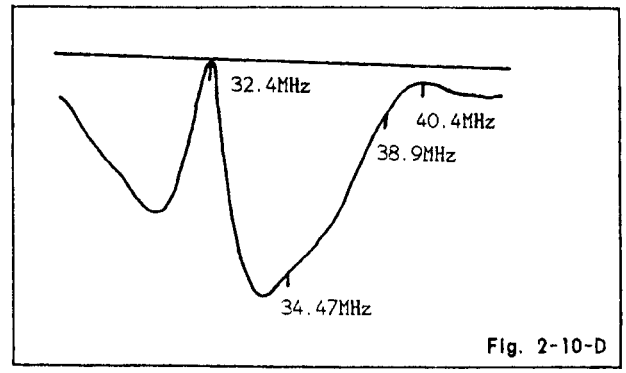


Fig. 2-10-D

2-13: AFT

NOTE

Disconnect the condenser C6014 in the adjustment.

INSTRUCTIONS

1. Connect output of the sweepmarker generator to Tuner Pack TP and adjust **L6005** so that output waveform for **TP6002** is as shown in **Fig. 2-11.**
2. Disconnect the sweepmarker generator and the oscilloscope from tuner pack TP and connect the condenser C6014.
3. Connect the AFT adjustment oscillator (38.9MHz) to the tuner pack TP through 2.2K ohm and connect the DC voltmeter to **TP6002.**
4. Adjust **L6005** so that voltage at AFT switch ON is as much as one at AFT switch OFF.

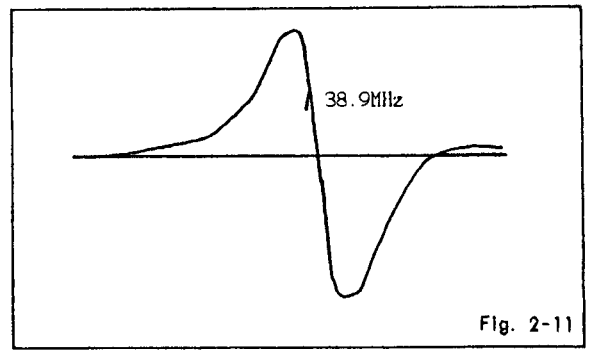


Fig. 2-11

ELECTRICAL ADJUSTMENTS

2-14: RF AGC

CONDITIONS

MODE - STOP
AFT SW : ON MODE

INSTRUCTIONS

1. Receive the monochrome pattern signal.
   (Receive the E-11ch)
2. Connect the DC voltmeter to **TP6008.**
3. Set input field strength to 80dB μ.
4. Adjust **VR6001** so that the voltage is equal to 4.5±0.1V.

2-15: COLOR LEVEL

CONDITIONS

MODE - STOP
AFT SW : ON MODE

NOTE

Video out of the unit should be terminated with 75 ohm load.

INSTRUCTIONS

1. Obtain a color bar signal.
   (Receive the E-48ch)
2. Connect the oscilloscope to **TP4201.**
3. Adjust **VR6002** so that the magenta level is 55±5% when Y-level is 100%.
   (Refer to Fig. 2-12)

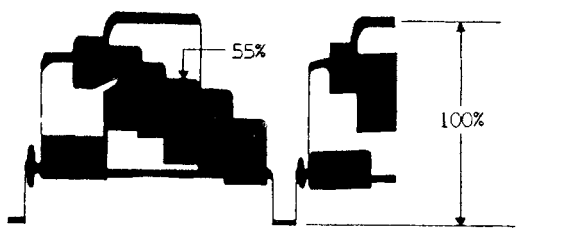
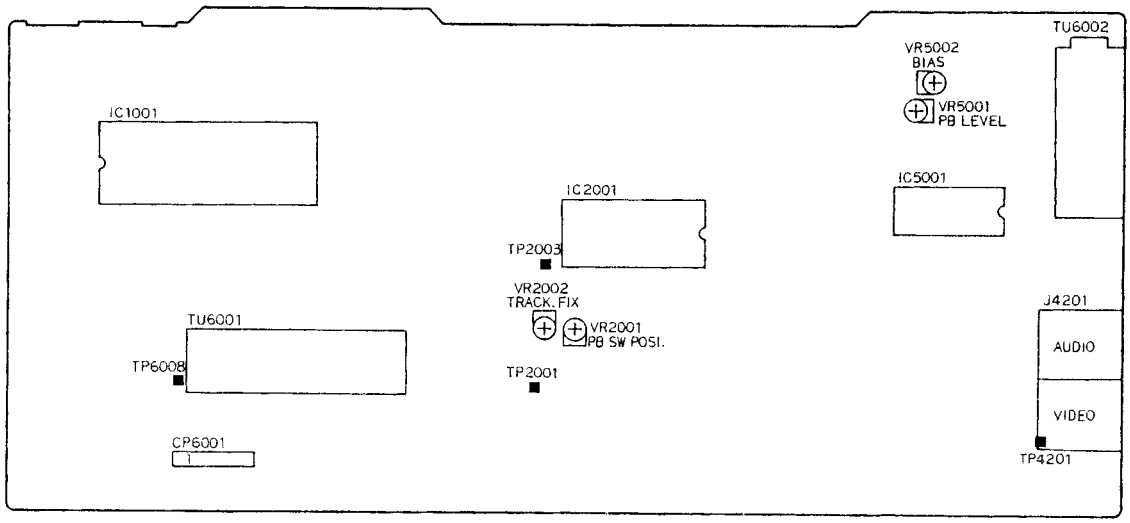
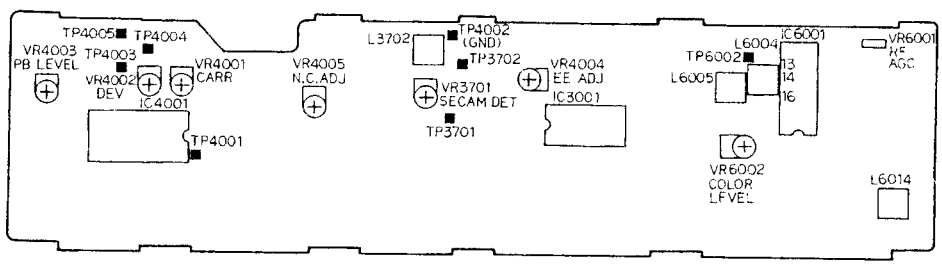


Fig. 2-12

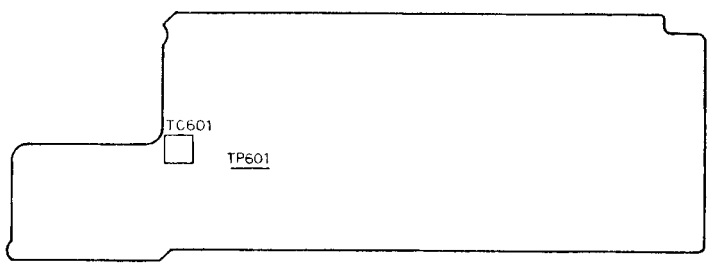
MAJOR COMPONENTS LOCATION GUIDE



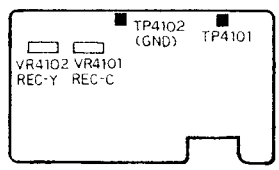
MAIN P.C.BOARD



Y. C P.C.BOARD



OPERATION P.C. BOARD



HEAD AMP P.C.BOARD

HOW TO RESET MICROCOMPUTER

When either or both of the following conditions occur, follow the procedure below:

CONDITIONS

* The digitron display does not light up.
* The unit does not stop, even when the "STOP" button is pressed.

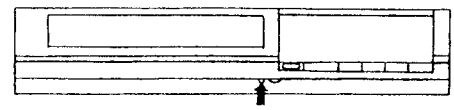
PROCEDURE

1. The reset switch is accessed through as unmarked hole, which is pointed by arrow is the illustration.

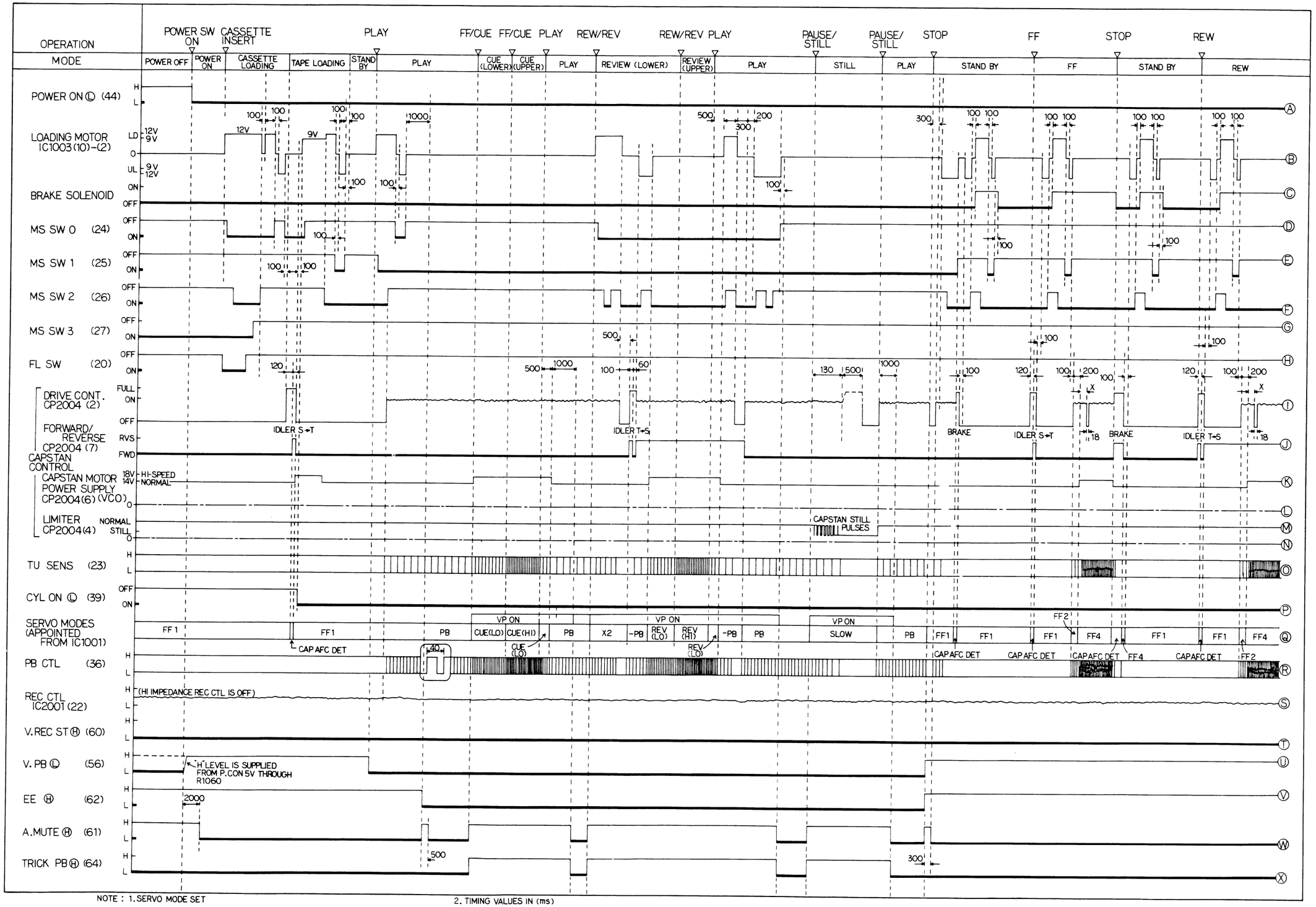
2. The unit is reset when a long, narrow probe (eg, the end of a paper clip) is inserted into the hole.

* After resetting the microcomputer, set the clock to the present time according to the owner's manual.

* A back-up circuit protects the unit from entering reset mode, even if the AC cord is unplugged from its AC outlet.



TIMING CHART



NOTE : 1. SERVO MODE SET

DATA (1) D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 LATCH

CLOCK (2)

2. TIMING VALUES IN (ms)

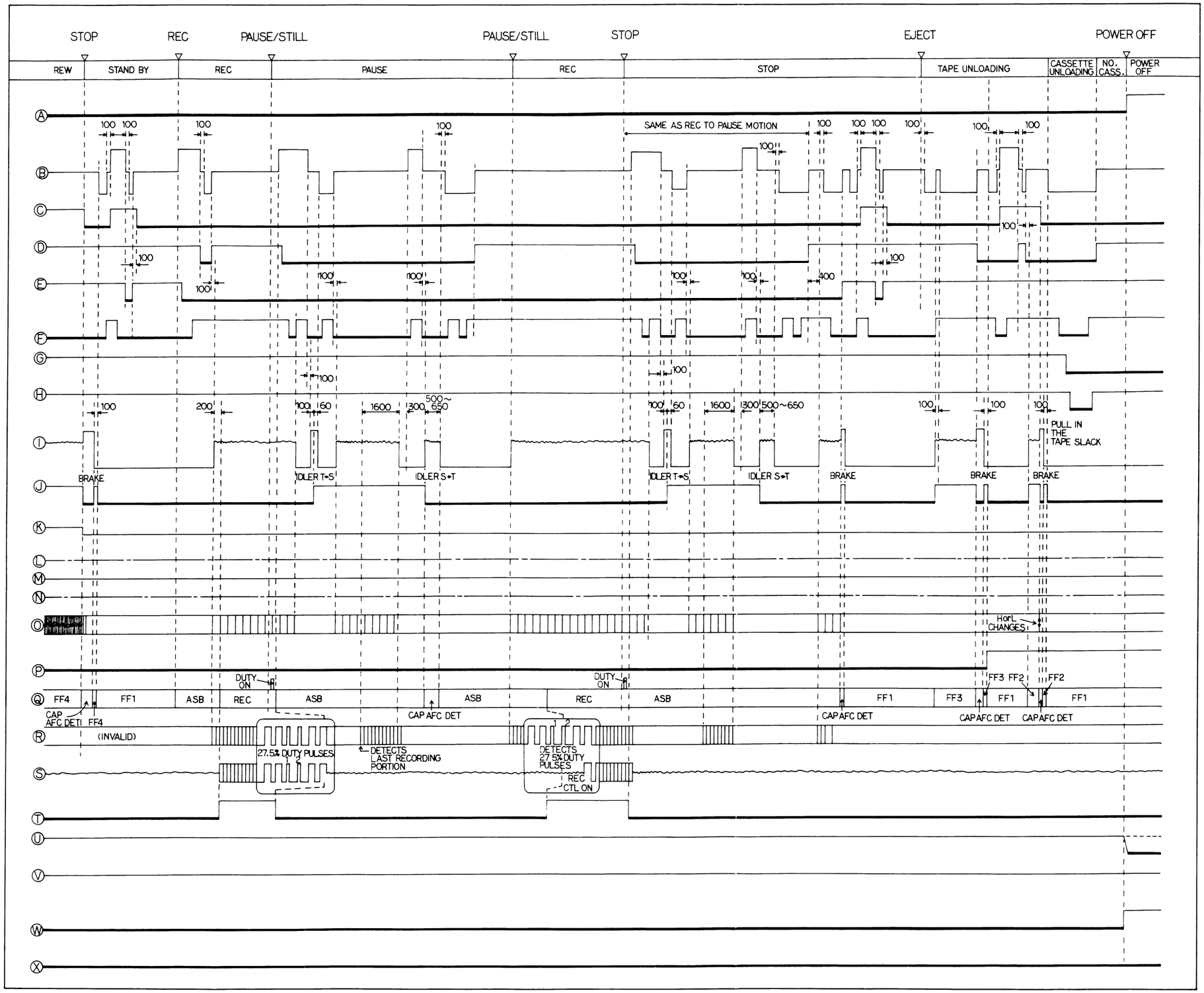
3. TIMING WAVE FORMS

HIGH — STAY HIGH or LOW

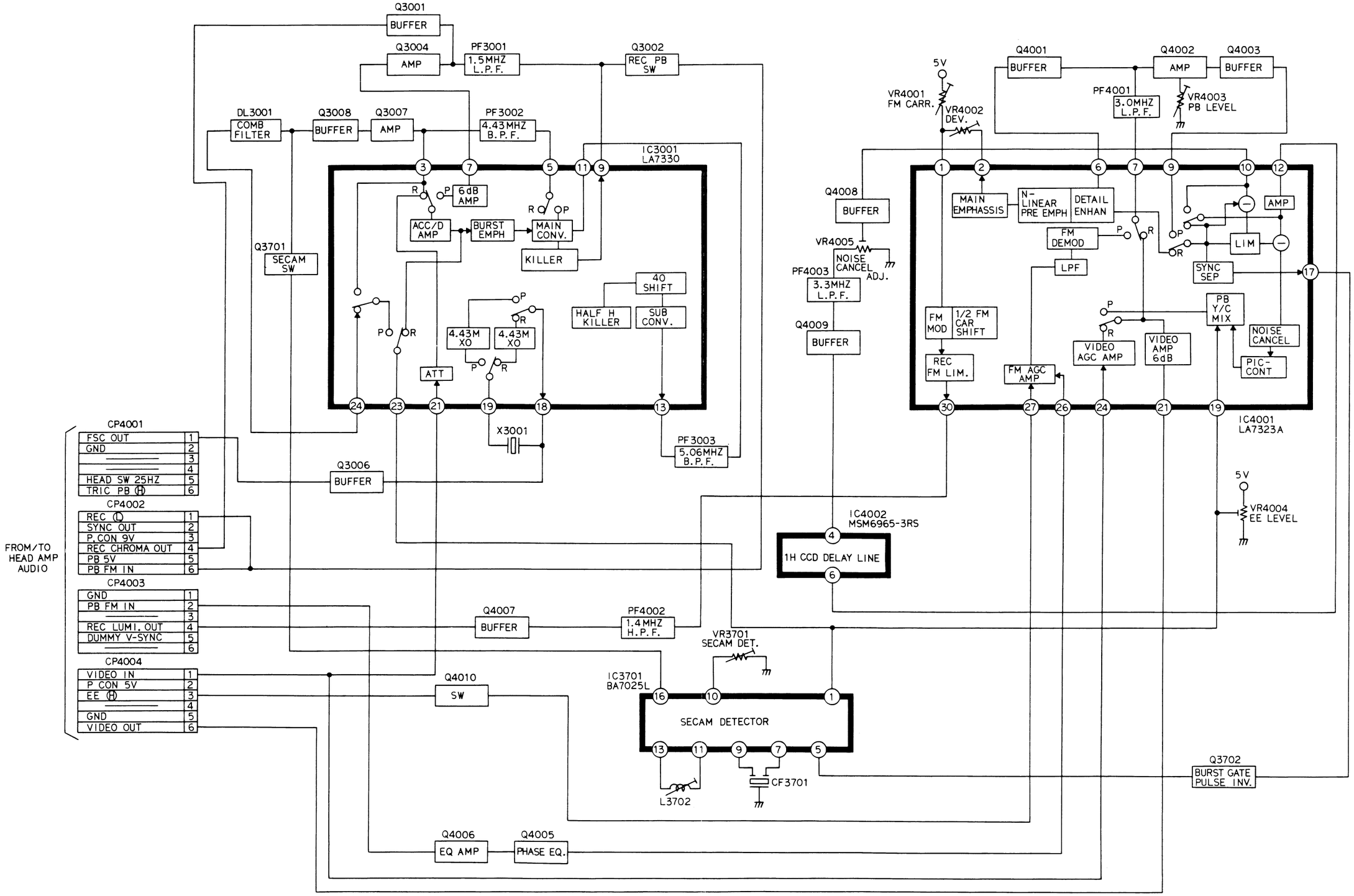
LOW — ALTERNATELY HIGH and LOW

TIMING CHART
I-8266

TIMING CHART



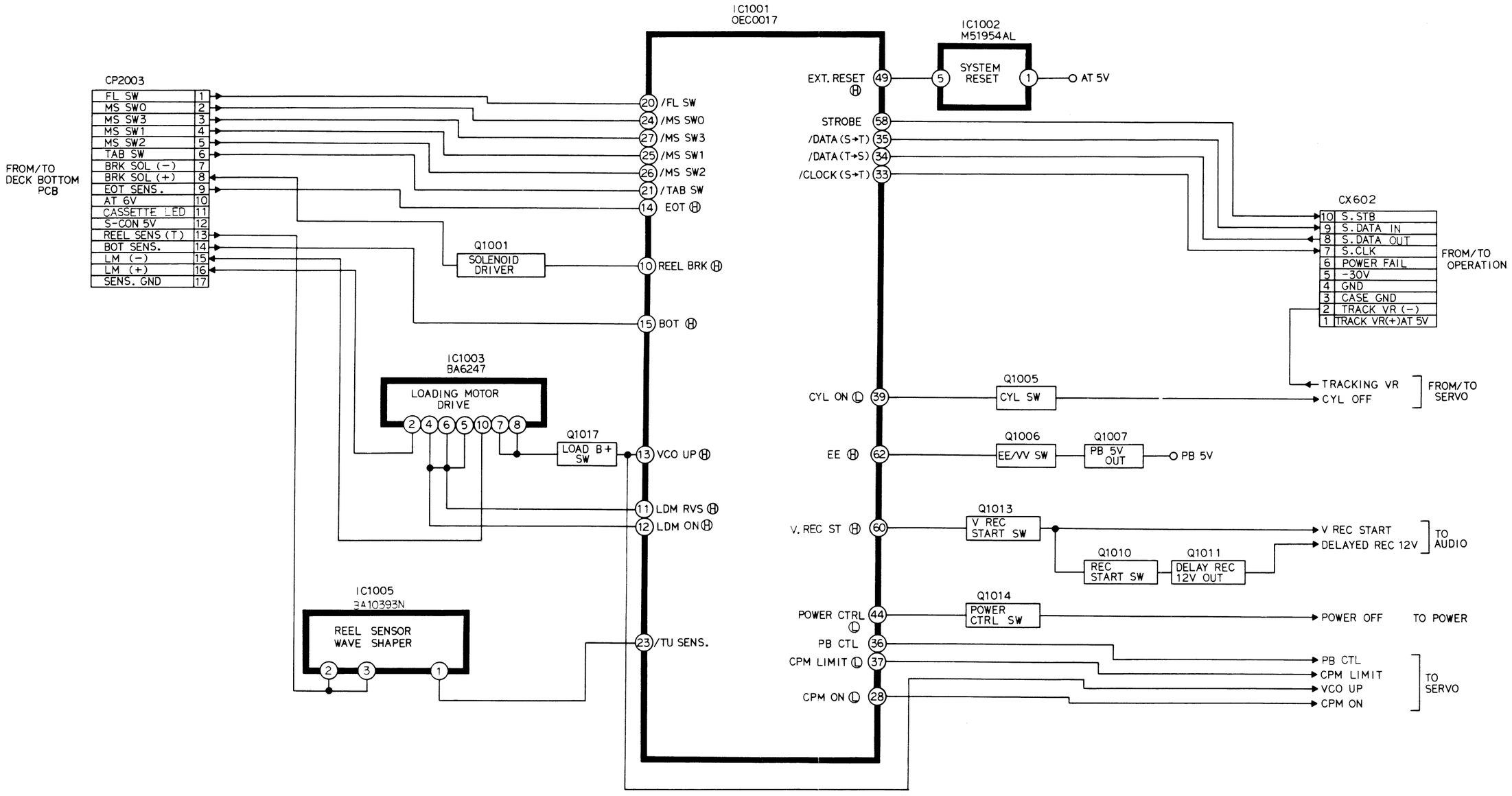
Y.C. BLOCK DIAGRAM



Y.C. BLOCK DIAGRAM

2-3378

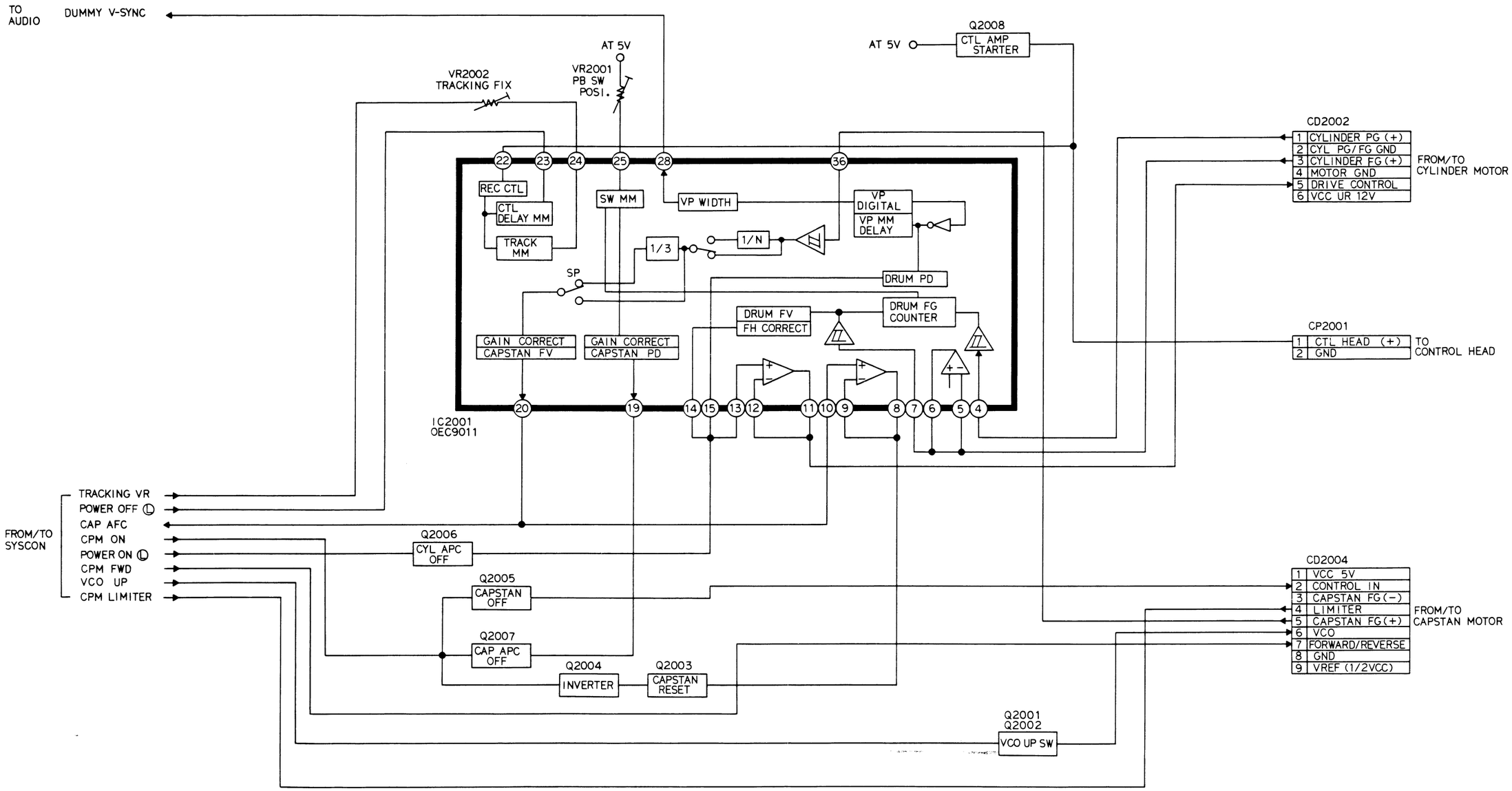
SYSTEM CONTROL BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM

2-3376

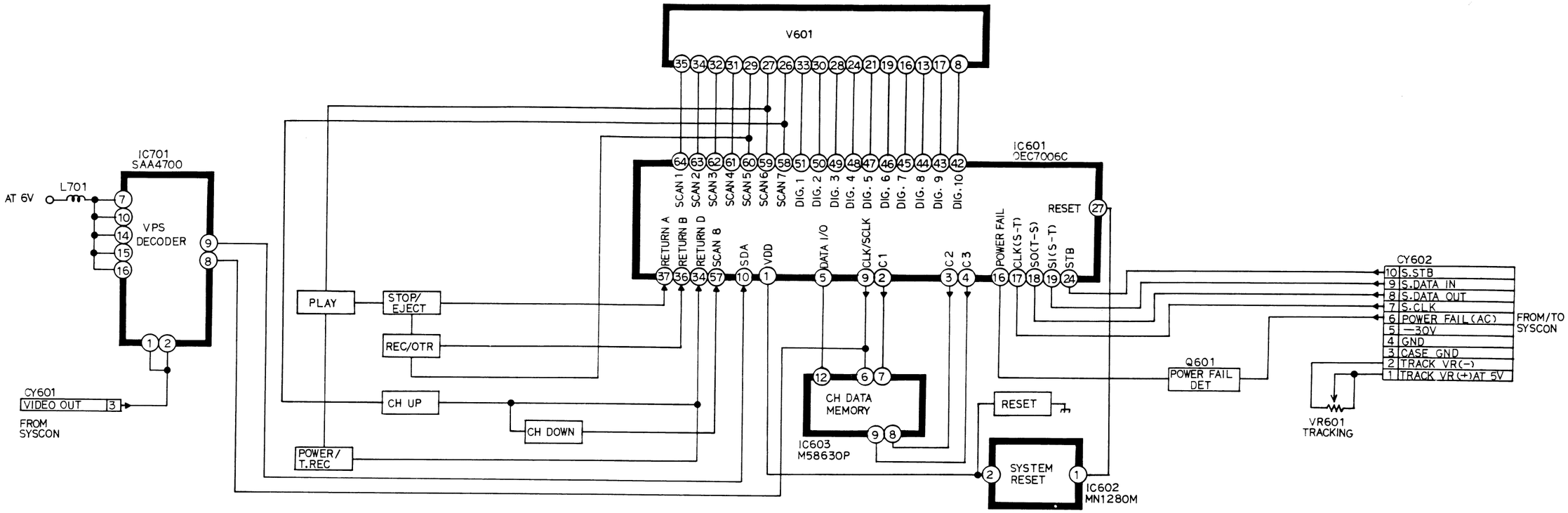
SERVO BLOCK DIAGRAM



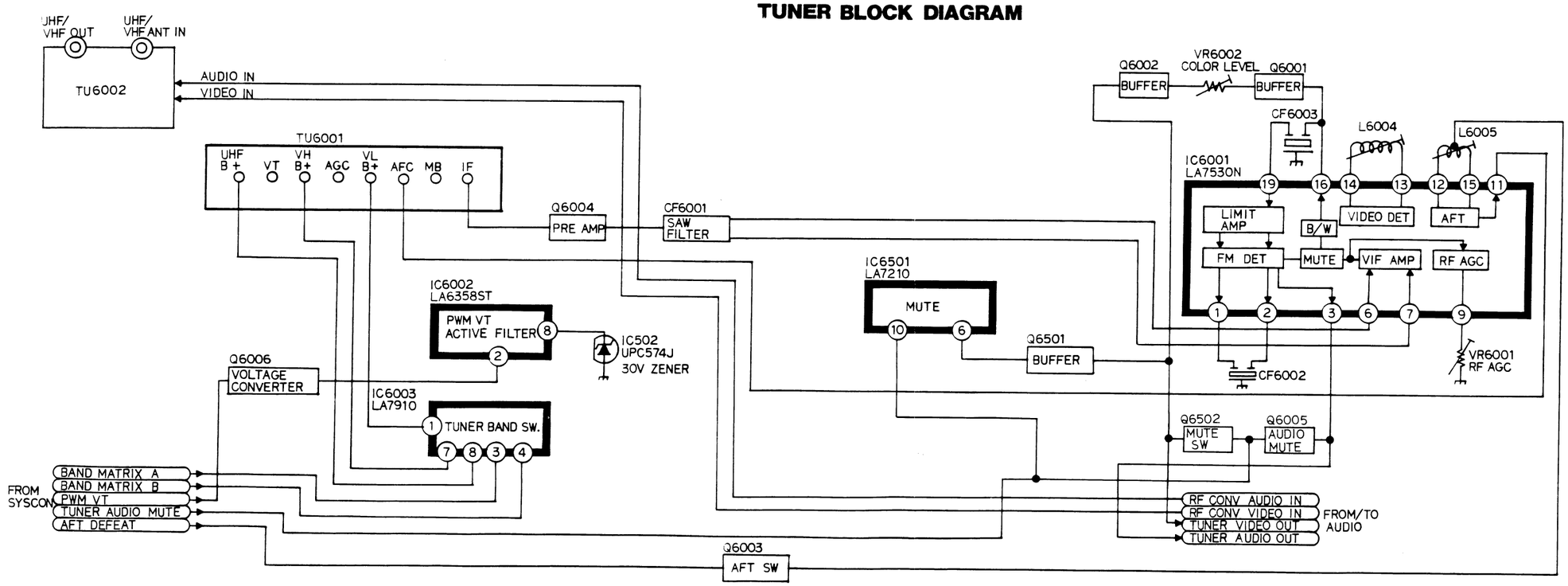
SERVO BLOCK DIAGRAM

2-3377

OPERATION BLOCK DIAGRAM

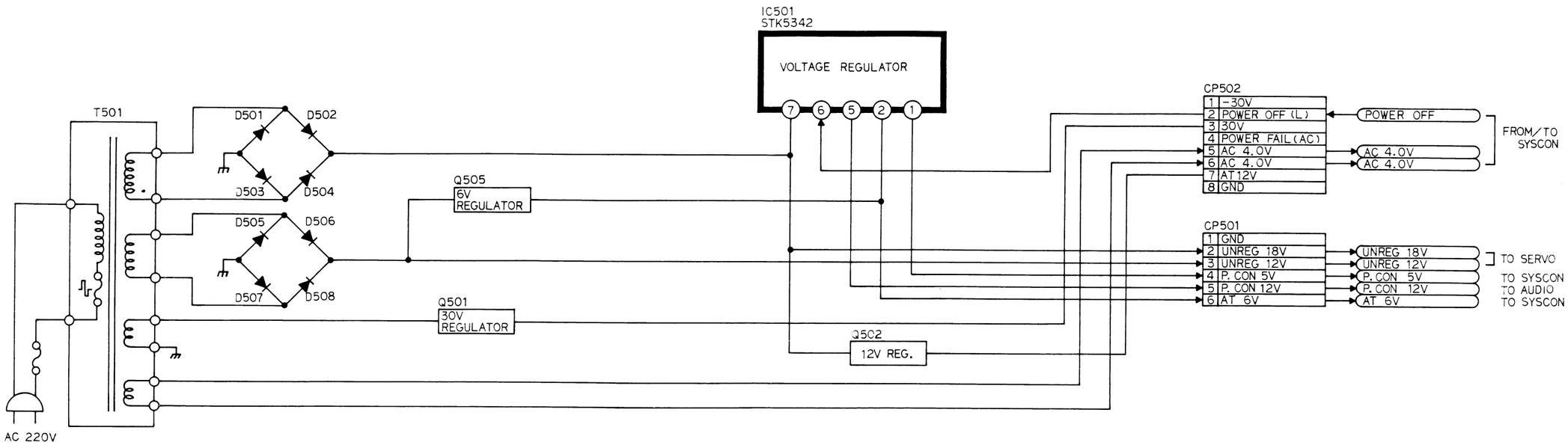


TUNER BLOCK DIAGRAM

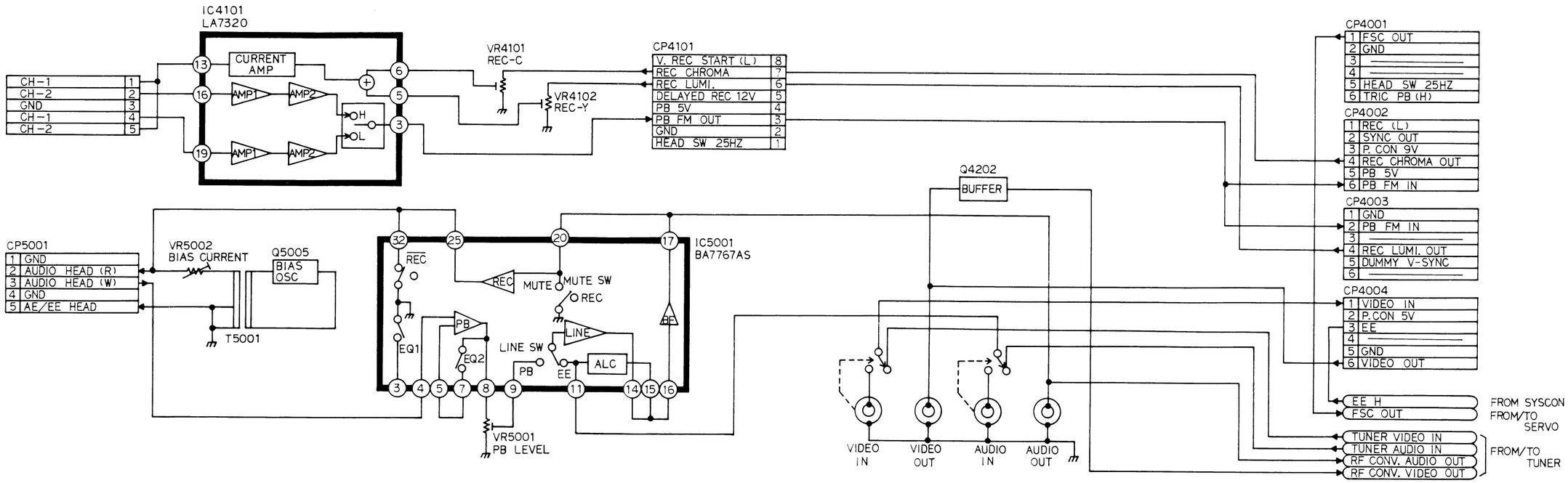


2-3423

POWER SUPPLY BLOCK DIAGRAM

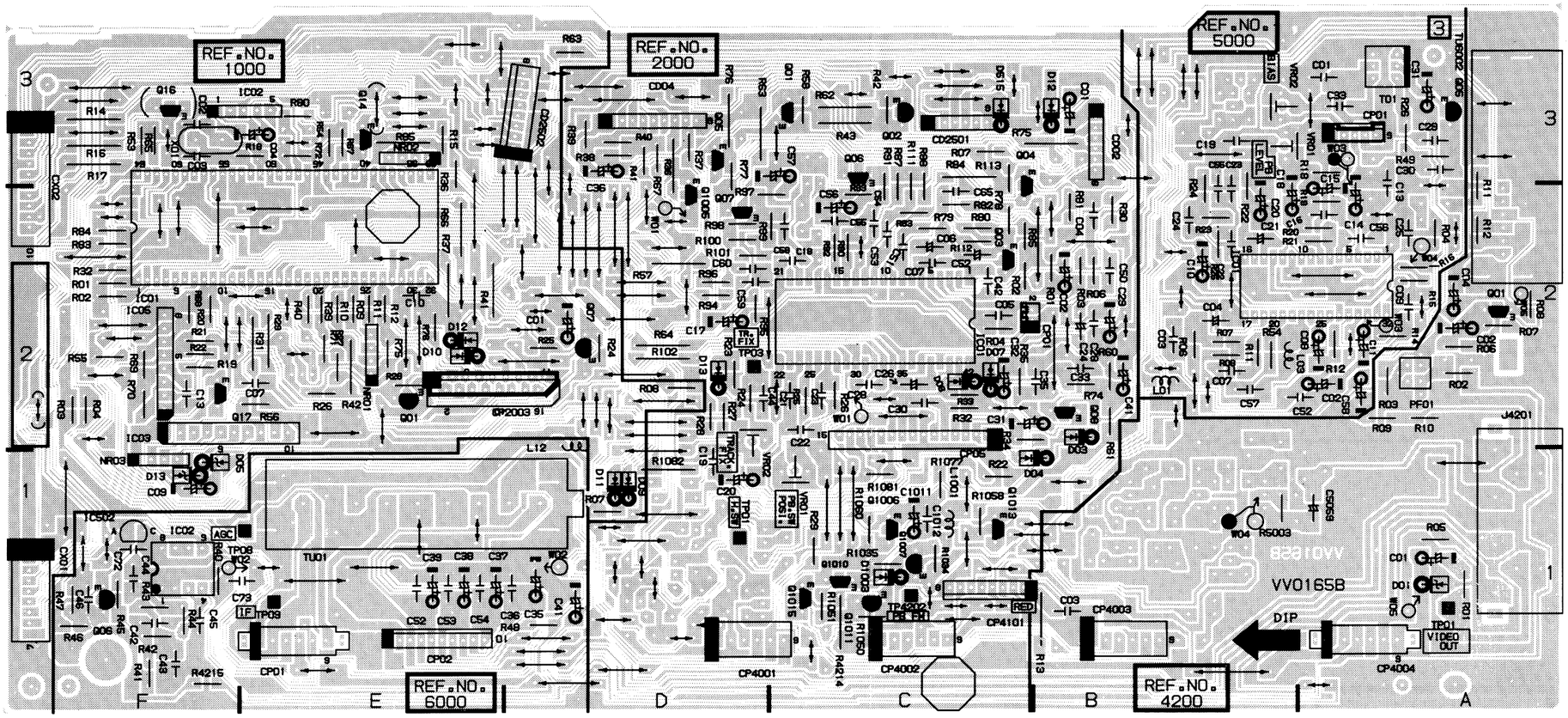


HEAD AMP/AUDIO BLOCK DIAGRAM

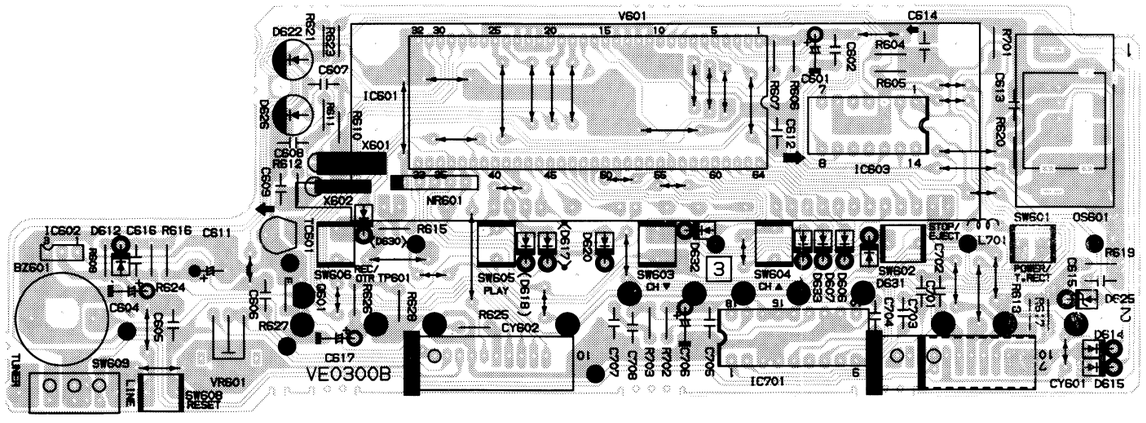


2-3380

MAIN P. C. BOARD

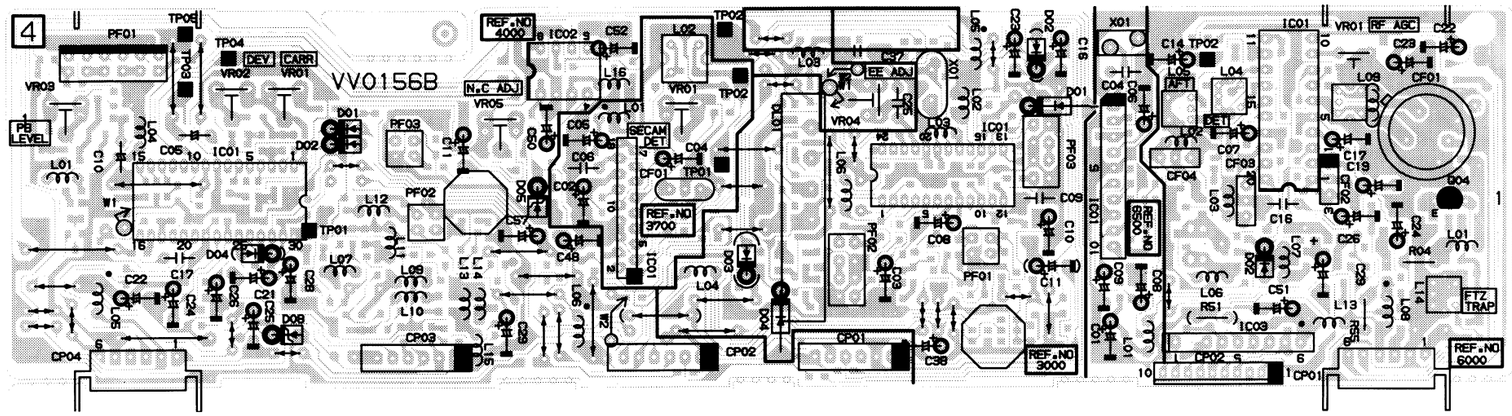


OPERATION P. C. BOARD

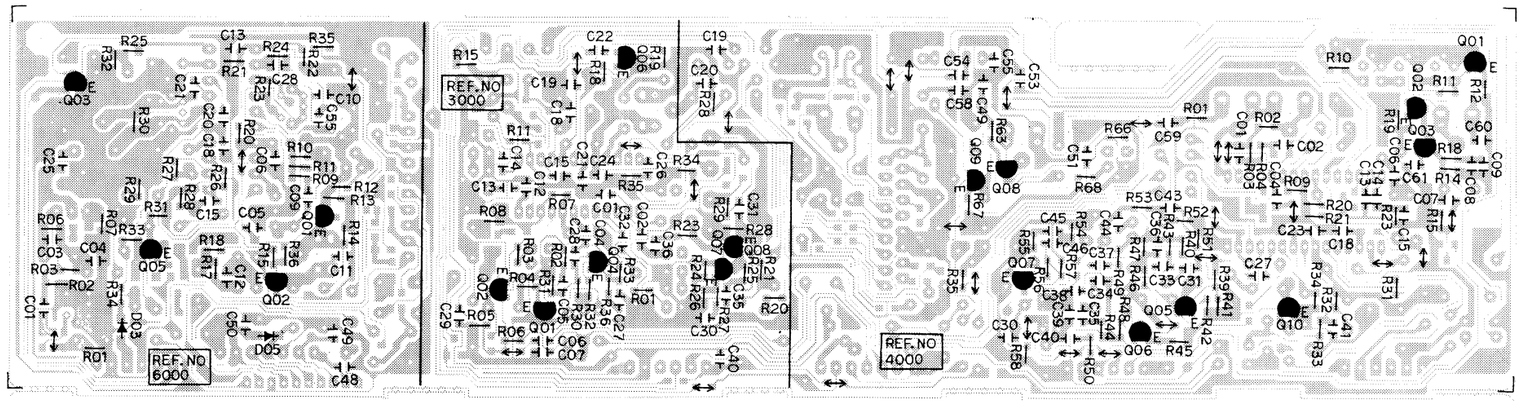


Y. C. P. C. BOARD

COMPONENT SIDE

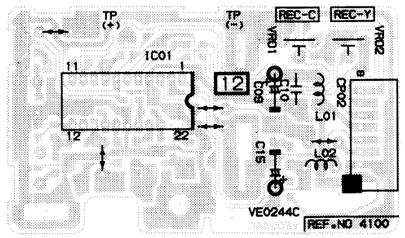


SOLDER SIDE

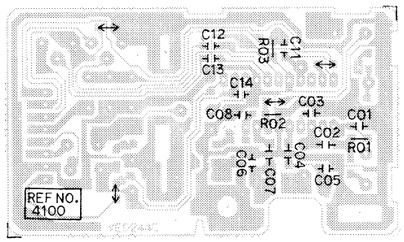


HEAD AMP P. C. BOARD

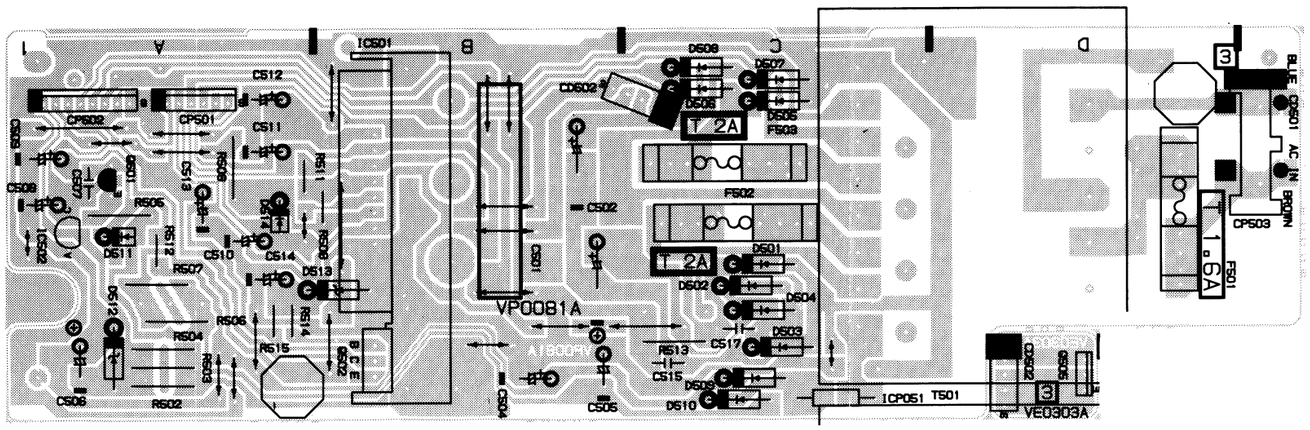
COMPONENT SIDE



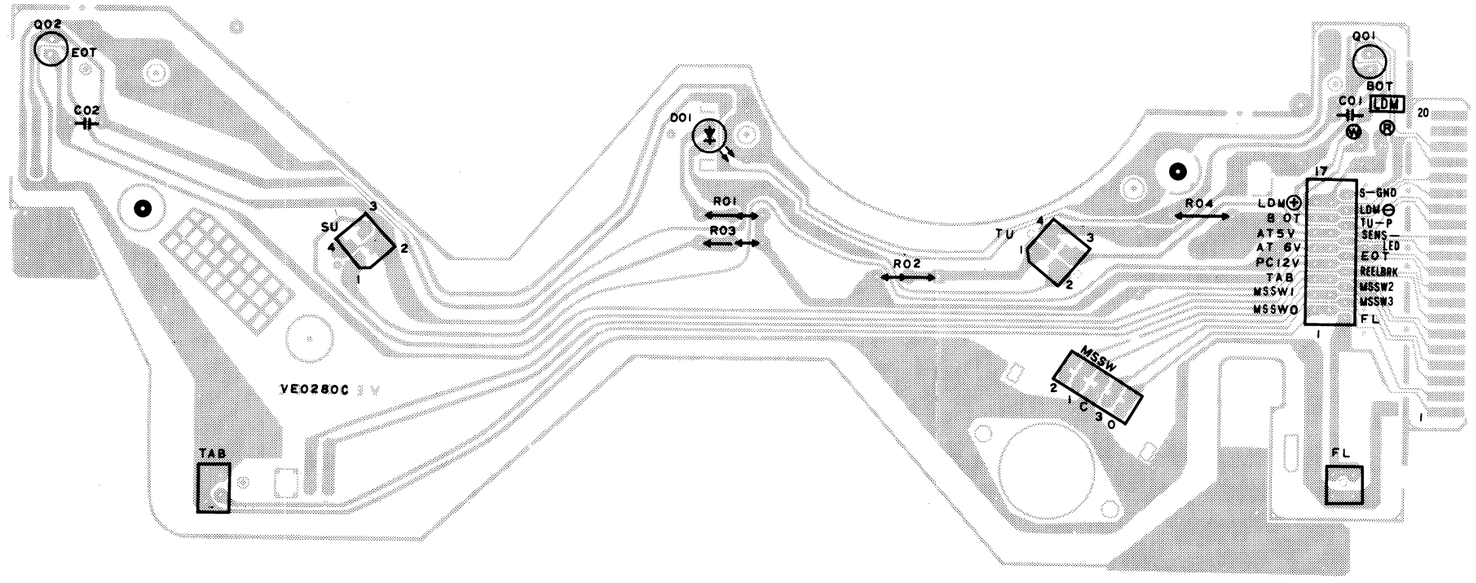
SOLDER SIDE



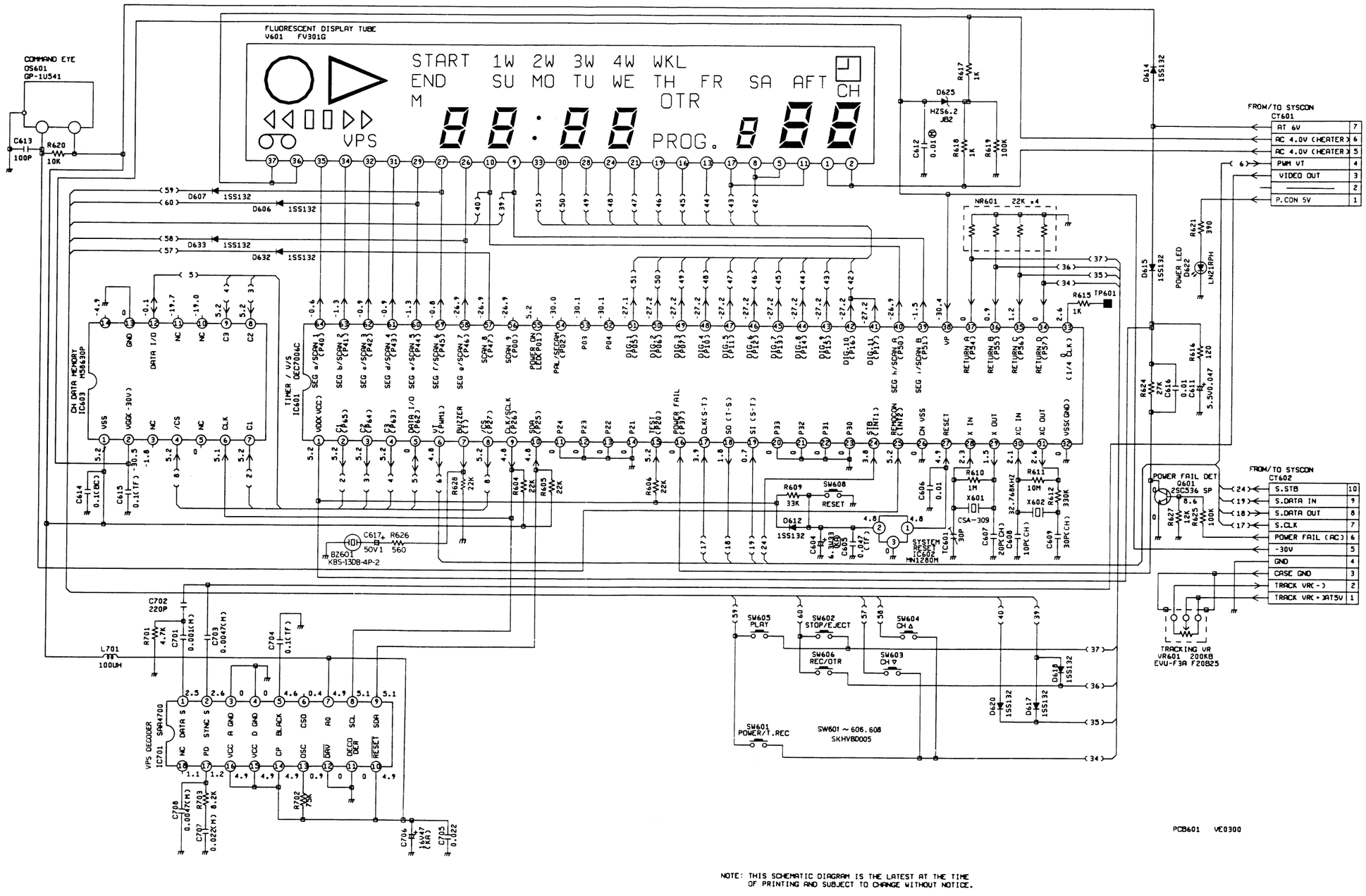
POWER SUPPLY/TRANSISTOR P. C. BOARD



DECK BOTTOM P.C.BOARD



OPERATION SCHEMATIC DIAGRAM

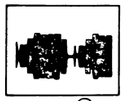


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

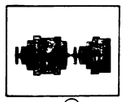
OPERATION SCHEMATIC DIAGRAM

1-8907

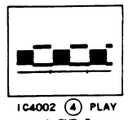
Y.C. SCHEMATIC DIAGRAM



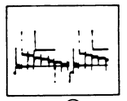
IC3001 (24)
0.025VP-P



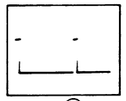
IC3001 (9) REC
0.84VP-P



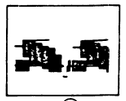
IC4002 (4) PLAY
1.5VP-P



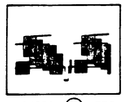
IC4001 (2) REC
4VP-P



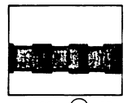
IC4001 (17) REC
0.96VP-P



IC4001 (21) REC
2.1VP-P

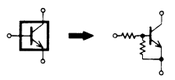


IC4001 (24) REC
0.88VP-P

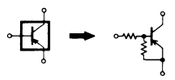


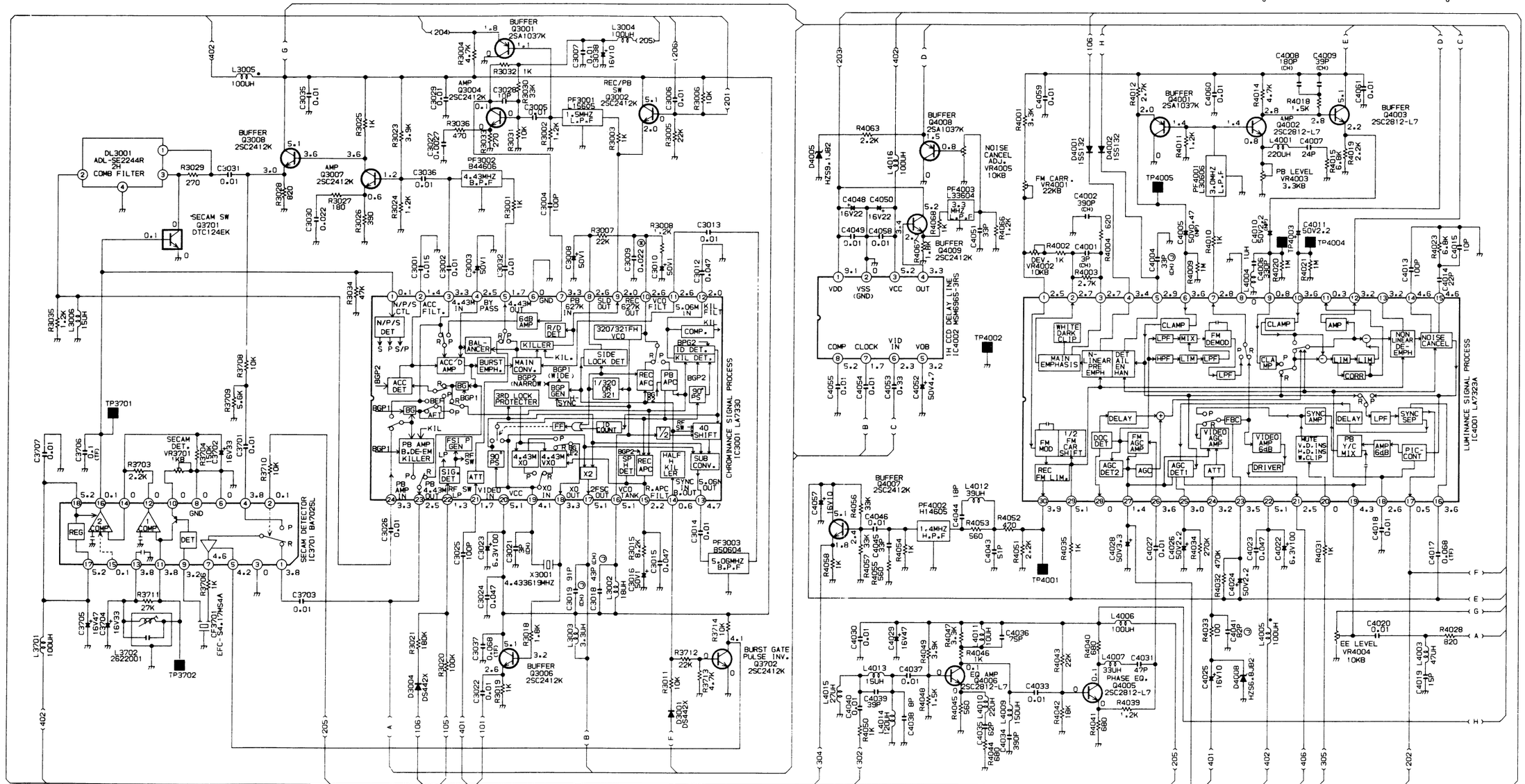
IC4001 (26) PB
0.08VP-P

CAUTION : DIGITAL TRANSISTOR



CAUTION : DIGITAL TRANSISTOR





CP4001 (1) FSC OUT
0.5VP-P

TP4001 1.4VP-P

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

FROM/TO HEAD AMP/AUDIO CP4001

1	FSC OUT
2	GND
3	
4	
5	HEAD SW 25HZ
6	TRIC PB (6)

FROM/TO HEAD AMP/AUDIO CP4002

1	REC (7)
2	SYNC OUT
3	P.CON 5V
4	REC CHROMA OUT
5	PB 5V
6	PB FM IN

FROM/TO HEAD AMP/AUDIO CP4003

1	GND
2	PB FM IN
3	
4	REC LUMI. OUT
5	DUMMY V-SYNC
6	

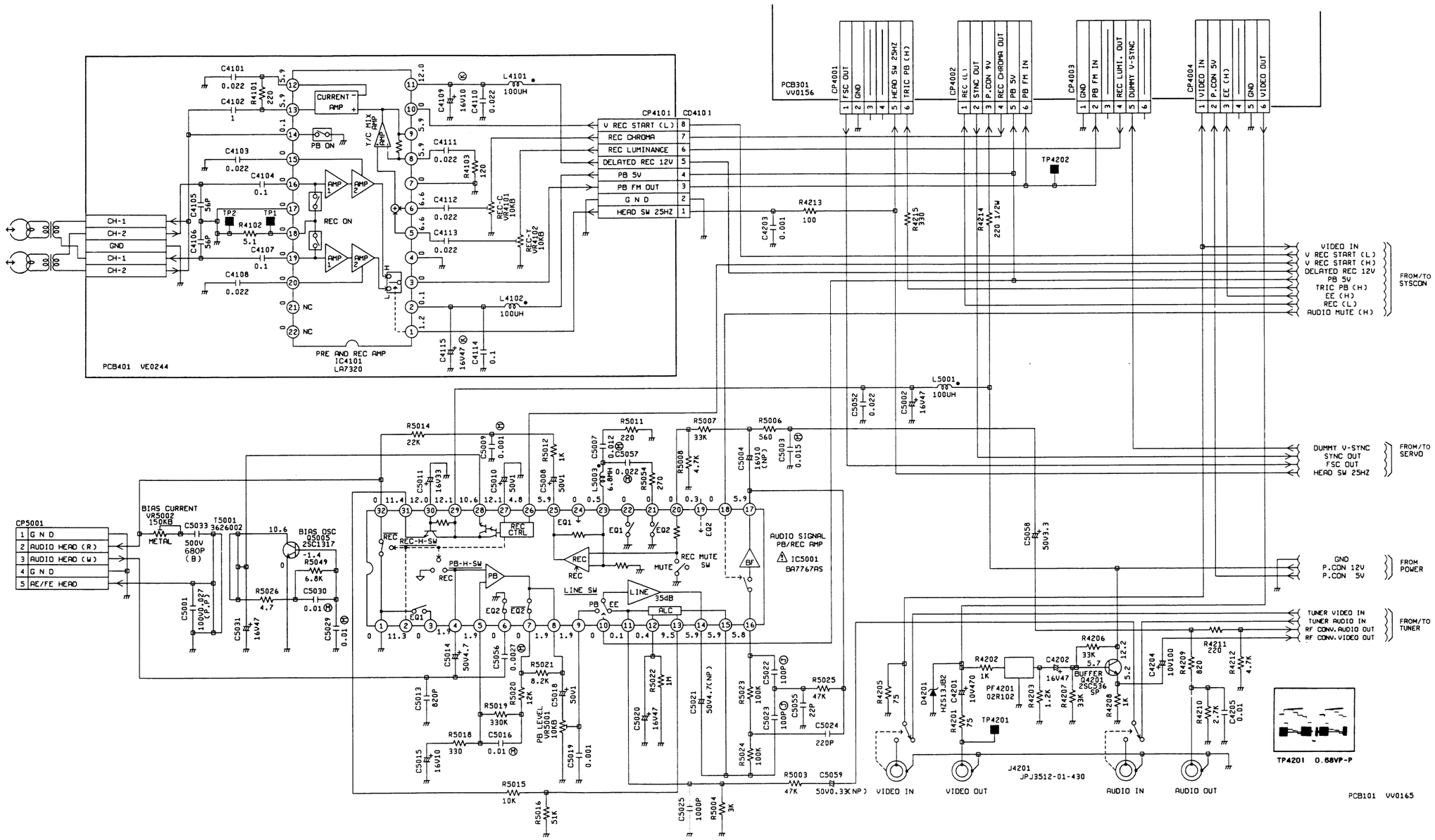
FROM/TO HEAD AMP/AUDIO CP4004

1	VIDEO IN
2	P.CON 5V
3	EE (8)
4	
5	GND
6	VIDEO OUT

Y.C. SCHEMATIC DIAGRAM

1-8326

HEAD AMP/AUDIO SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

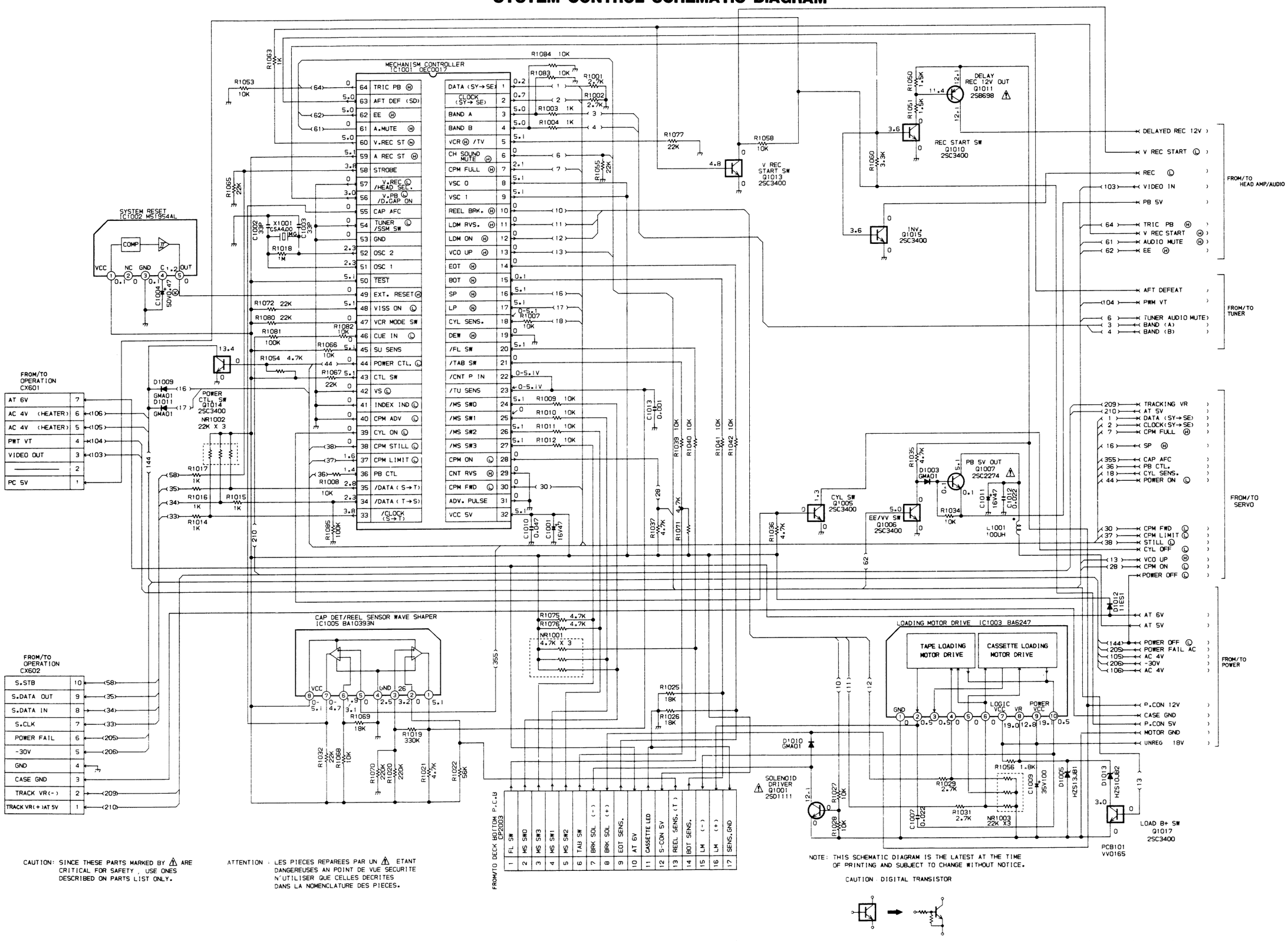
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

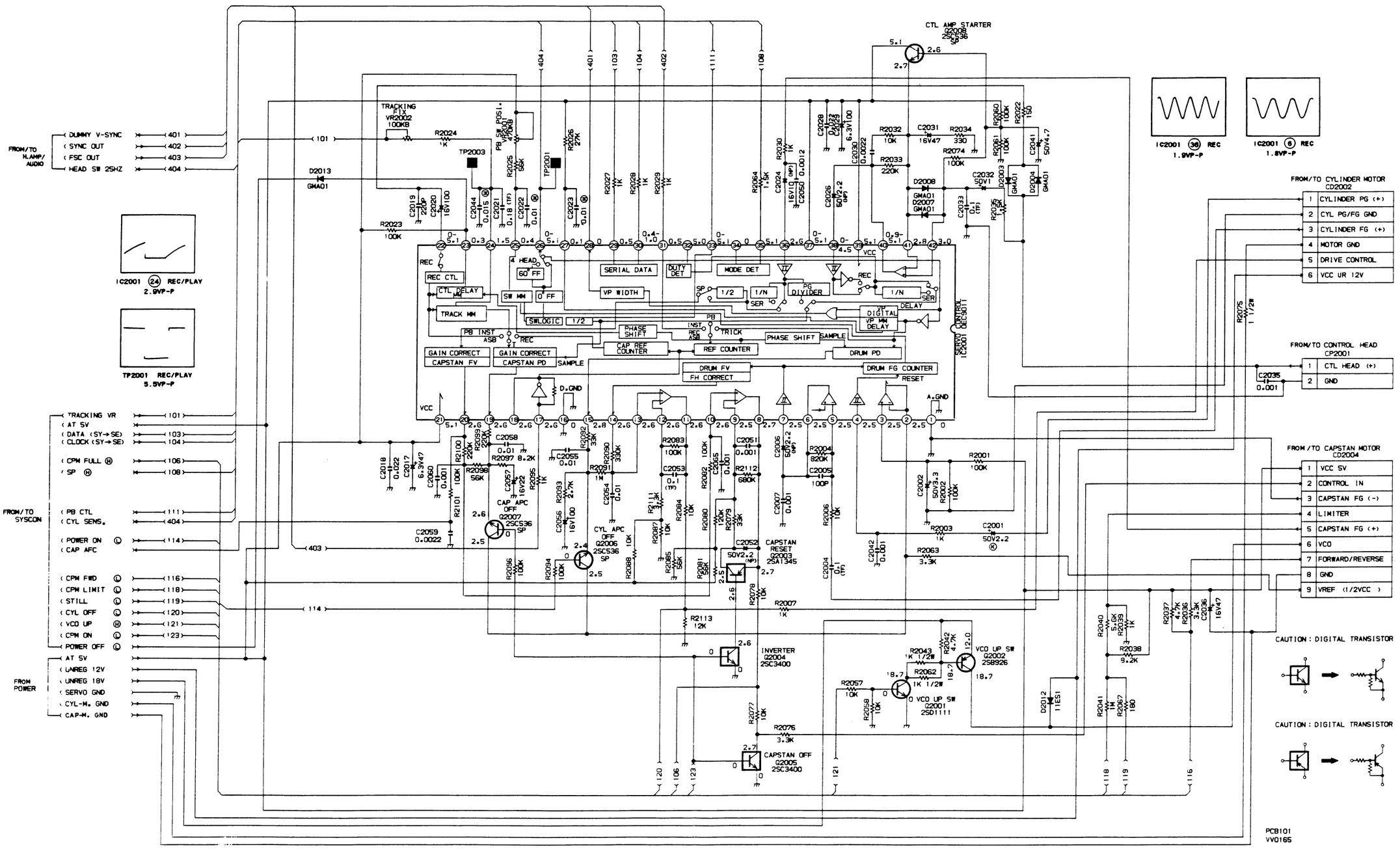
HEAD AMP/AUDIO SCHEMATIC DIAGRAM

1-8332

SYSTEM CONTROL SCHEMATIC DIAGRAM



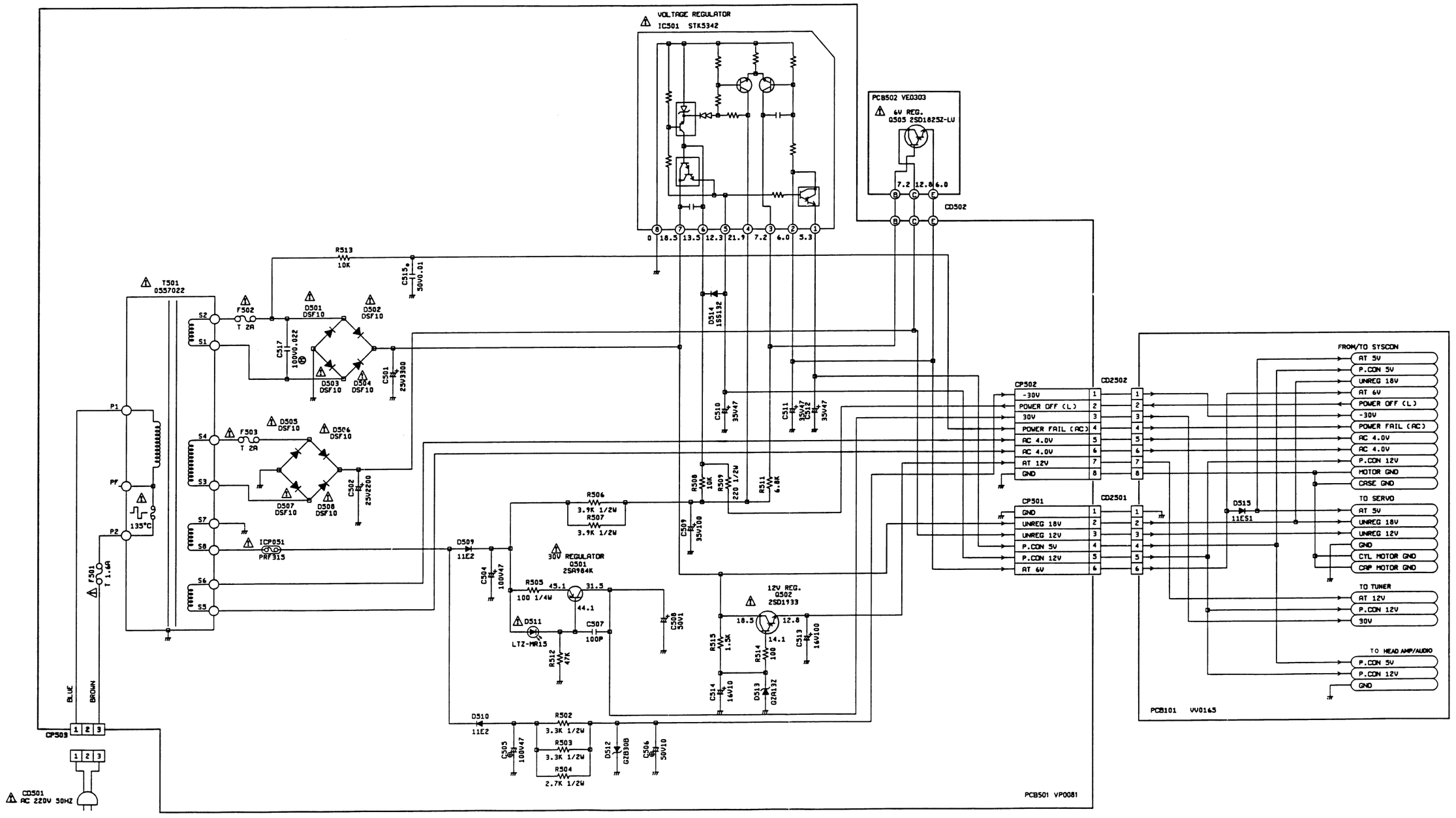
SERVO SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

SERVO SCHEMATIC DIAGRAM
1-8328

POWER SUPPLY SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

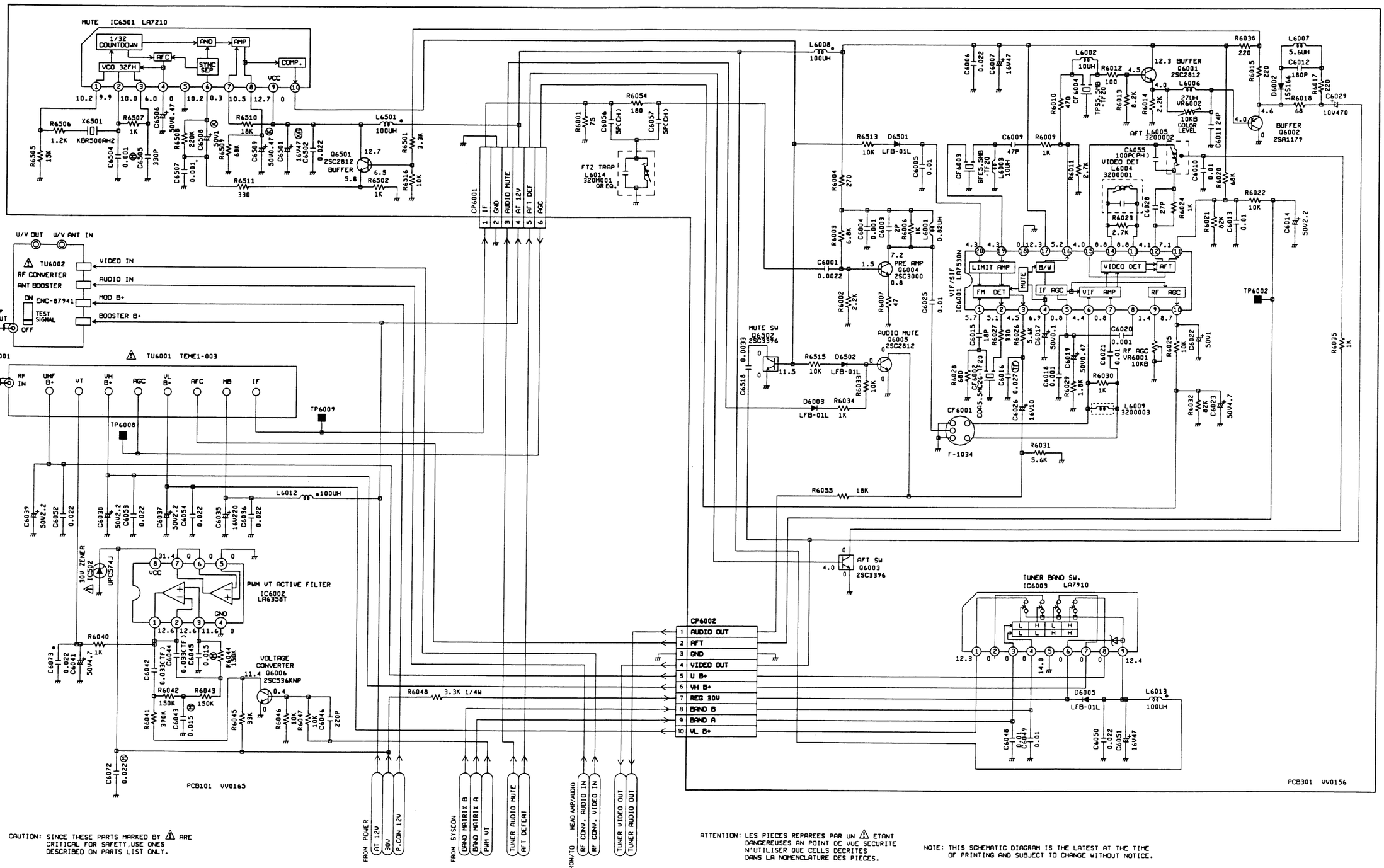
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

POWER SUPPLY SCHEMATIC DIAGRAM

1-8329

TUNER SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

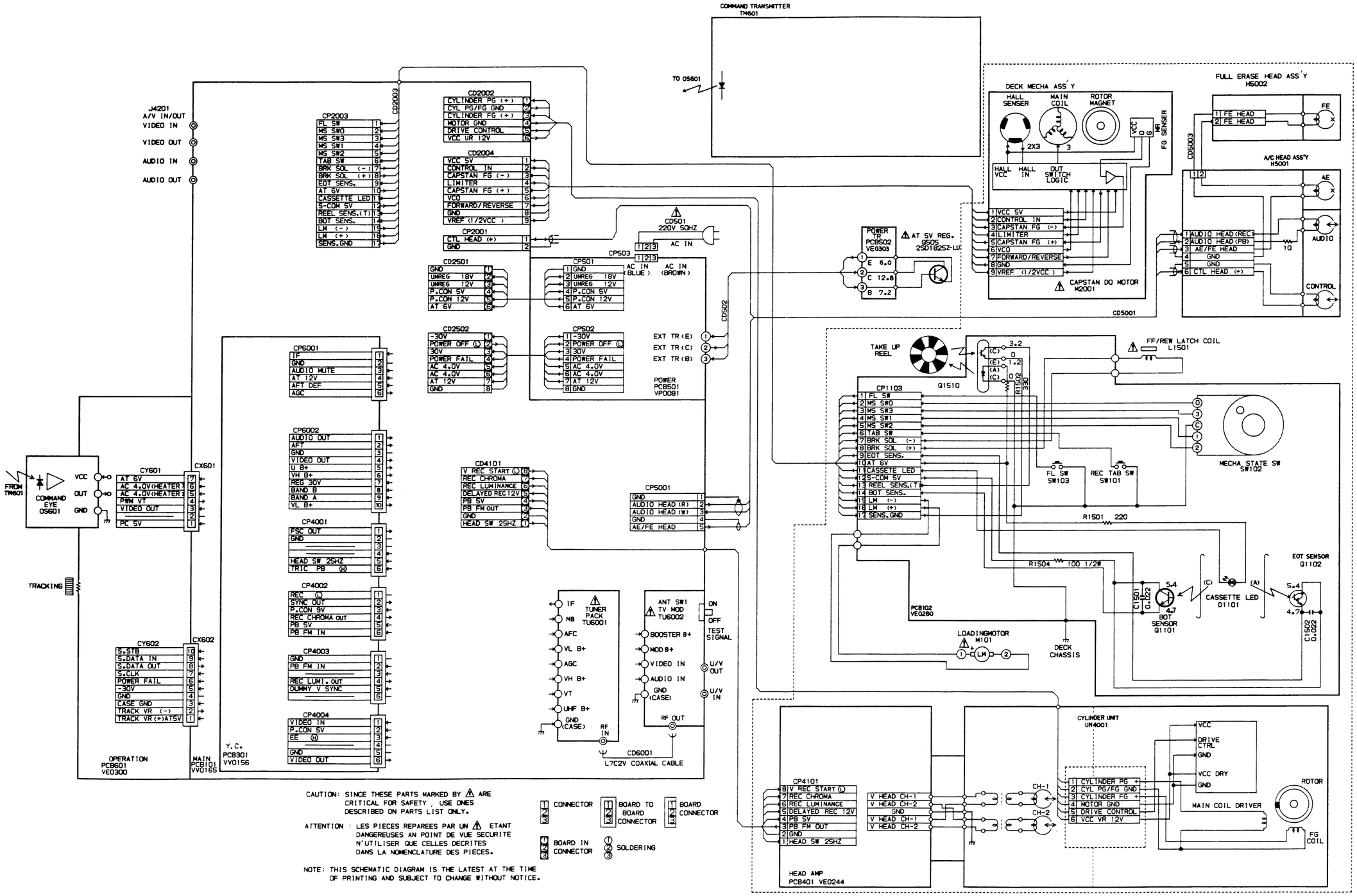
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

TUNER SCHEMATIC DIAGRAM

1-8331

INTERCONNECTION DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

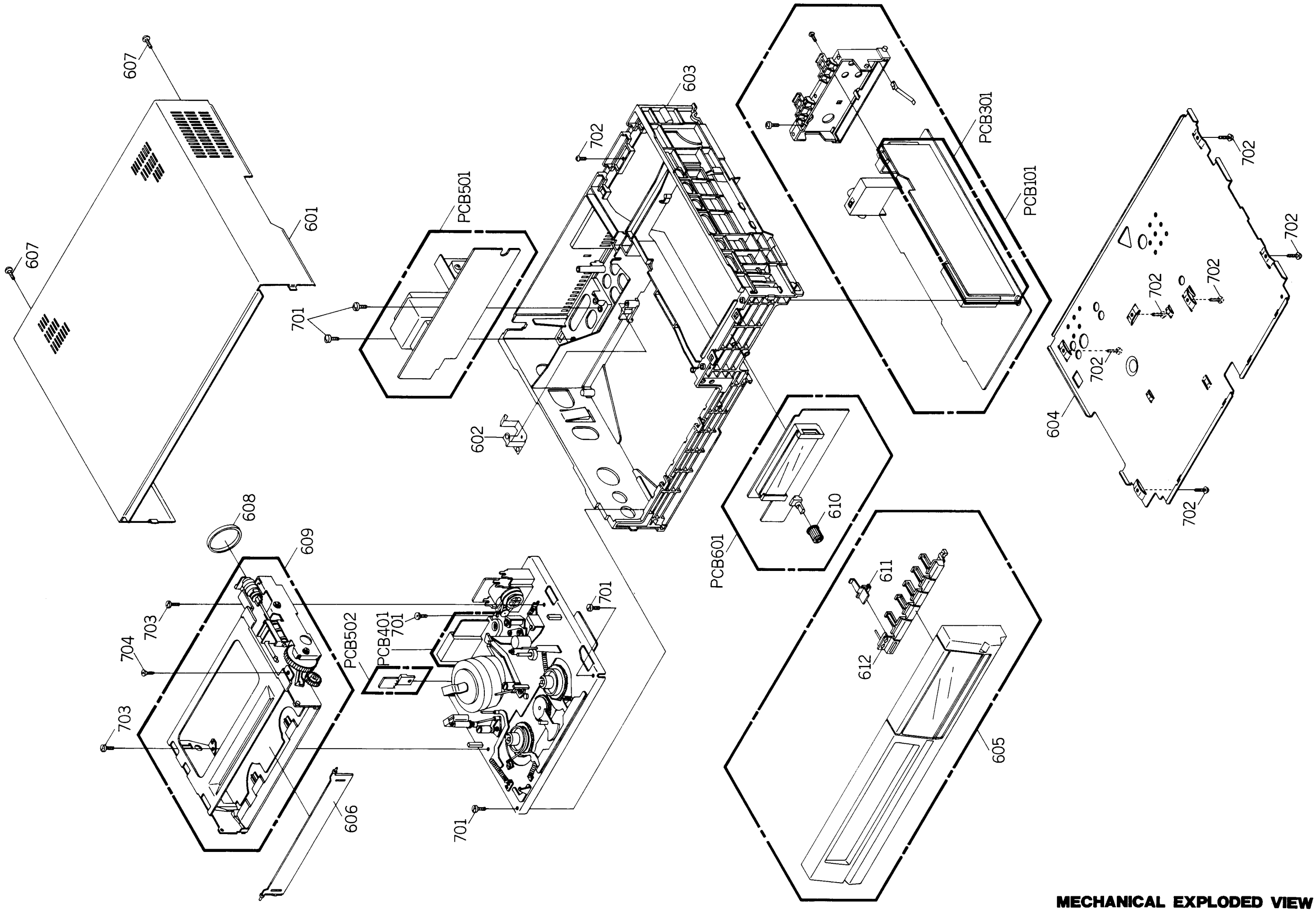
ATTENTION : LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CONNECTOR | BOARD TO BOARD CONNECTOR | BOARD CONNECTOR | BOARD IN CONNECTOR | SOLDERING

INTERCONNECTION DIAGRAM
1-8325

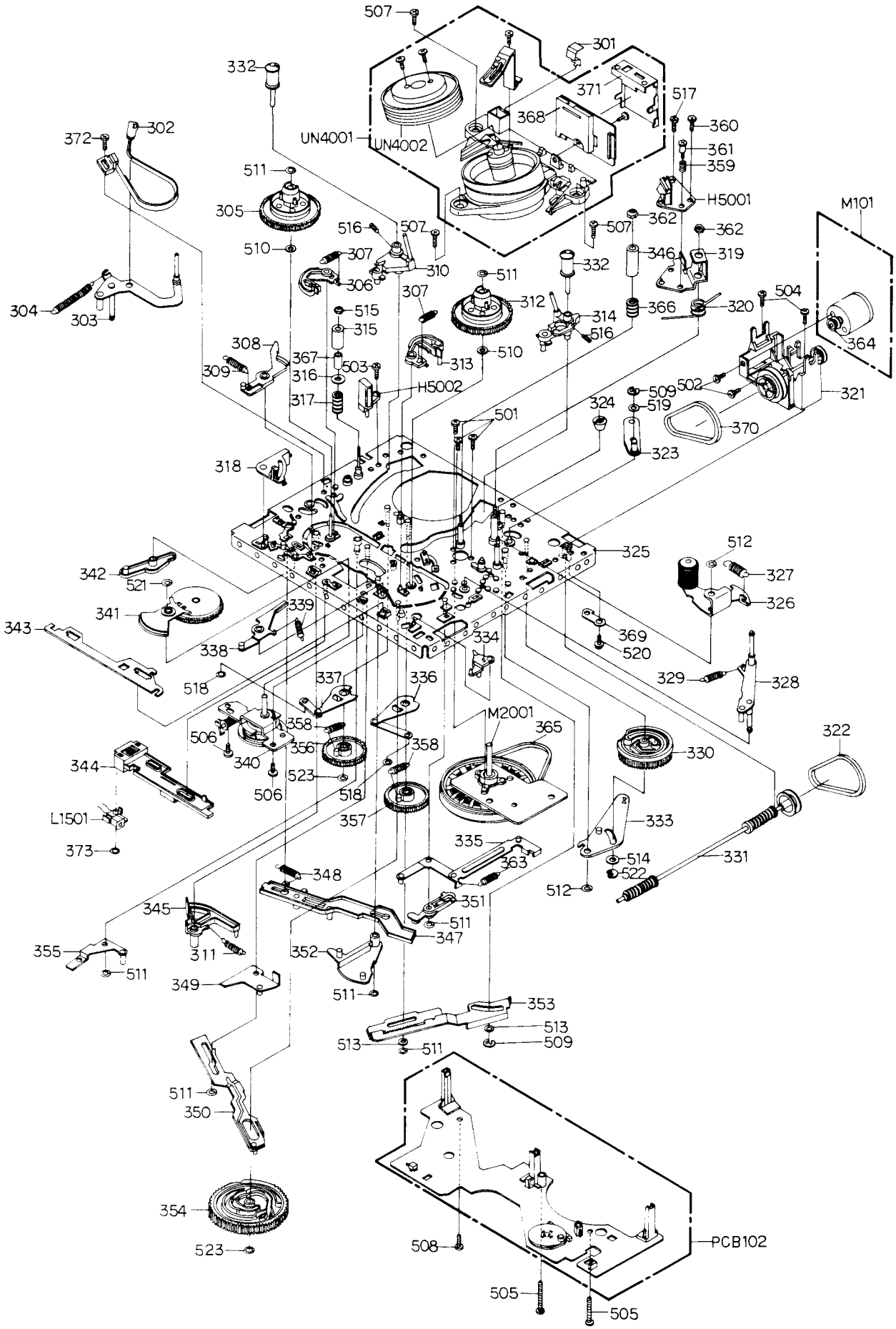
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW

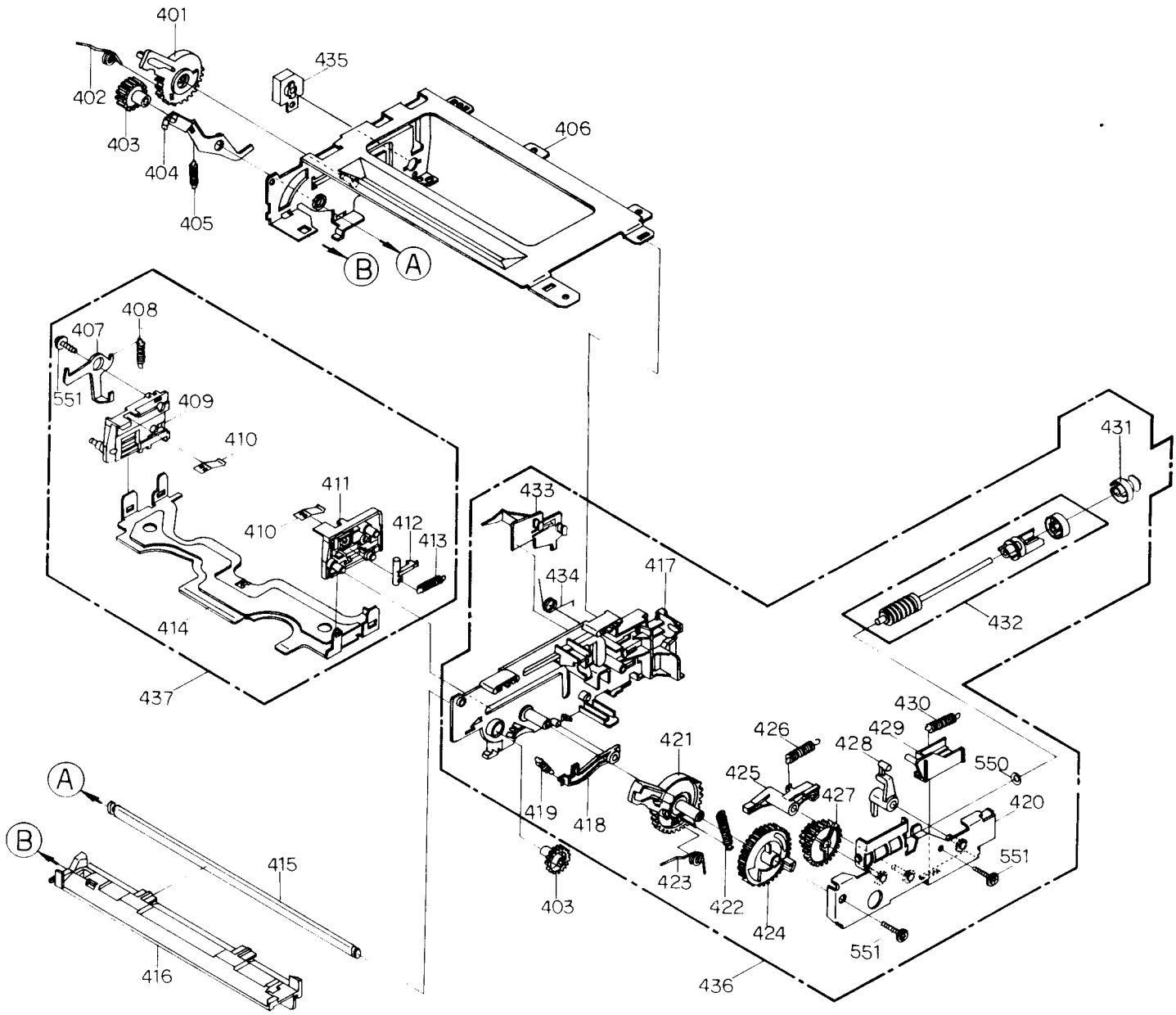
1-8333

DECK EXPLODED VIEW



2-333BA

DECK EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION
601	702USS0013	CABINET,TOP
602	753TUA0009	SPRING,DECK EARTH
603	702UPA0017	CABINET,INSIDE
		SHEET,RATING
604	702USA0013	PLATE,BOTTOM
605	A44826A720	CABINET,FRONT ASS'Y
606	7230003359	FLAP
607	788JSE0014	TAPPING(BO) TRUSS 4*12 BK
608	85OP600315	BELT,FRONT LOADING
609	A44802A650	FRONT LOADING UNIT(FL-6)
610	732WPA0002	TRACKING,KNOB
611	735UPA0034	BUTTON,REC
612	735UPD0099	BUTTON,DECK
701	8117140A24	TAPPING(BO) PAN 4*12 CH
702	8110630804	TAP TITE(P) BRAZIER 3*8 CH
703	8107230804	TAP TITE(S) BIND 3*8 CH
704	8117330A04	TAPPING(BO) FLAT 3*10 CH
---	J4237720B	CAUTION SHEET
---	J4244039B	VPS CAUTION SHEET
---	J4371728A	WARNING SHEET
---	J4482601A	INSTRUCTION BOOK
---	J4482607A	QUICK SET-UP SHEET
---	791UHA0005	GIFT,SHEET
---	792UHA0020	PACKAGE
---	793UCD0258	GIFT BOX

DECK REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION	
301	850P500023	SPRING,TR.	
302	850A600093	TENSION BAND ASS'Y	
303	850A400077	TENSION,ARM ASS'Y	
304	850P800141	SPRING,TENSION ARM	
305	850A200028	REEL DISK S ASS'Y	
306	850A600092	MAIN BRAKE S ASS'Y	
307	850P800142	SPRING,MAIN BRAKE	
308	850P600309	ARM,S-S BRAKE	
309	850P800164	SPRING,SS BRAKE	
310	850A400087	BASE,S INCLINED ASS'Y	
311	850P800163	SPRING,M-B 3	
312	850A200029	REEL DISK T ASS'Y	
313	850A600094	MAIN BRAKE T ASS'Y	
314	850A400080	BASE,T INCLINED ASS'Y	
315	850P500046	ROLLER,IMPEDANCE	
316	850P600274	FLANGE,P1	
317	850P800075	SPRING,P1	
318	850P600306	LEVER,REC.SW	
319	850P500042	BASE,AC HEAD 2	
320	850P800150	SPRING,AC HEAD BASE	
321	850A600115	LOADING,M.BOX ASS'Y	
322	850P600317	BELT,LOADING MOTOR	
323	850A500008	P-R,LEVER ASS'Y	
324	850P600314	NUT,ADJUST X	
325	850A000031	MAIN,CHASSIS ASS'Y	
326	850A400073	PINCH ROLLER ARM ASS'Y	
327	850P800149	SPRING,P-R ARM	
328	850A400078	LIMITER,POST ARM ASS'Y	
329	850P800148	SPRING,L-P ARM	
330	850P600305	CAM 1	
331	850A600114	WORM ASS'Y	
332	850A400085	G-ROLLER ASS'Y	
333	850A300031	LOADING,LEVER 2 ASS'Y	
334	850P600311	LEVER,SUB BRAKE	
335	850A900083	LEVER FRONT LOADING ASS'Y	
336	850A300030	LOAD.ARM T ASS'Y	
337	850A300029	LOADING,ARM S ASS'Y	
338	850A600107	T-S BRAKE ASS'Y	
339	850P800165	SPRING TS BRAKE	
340	850A200027	CLUTCH ASS'Y	
341	850A200026	IDLER ASS'Y	
342	850P600300	MAIN BRAKE LEVER 1	
343	850P600310	ACTUATOR,SUB BRAKE	
344	850A600113	CLUTCH ACTUATOR ASS'Y	
345	850P600303	LEVER TENSION	
346	850P600312	POST,P4	
347	850P600299	SLIDE,MAIN BRAKE	
348	850P800143	SPRING,M-B SLIDE	
349	850A600109	M-B 2 LEVER ASS'Y	
350	850A600108	T-A SLIDE ASS'Y	
351	850P600301	LEVER,LIMITER POST	
352	850P600302	LEVER,CLUTCH ACTUATOR	
353	850P300112	SLIDE,LOADING 2	
354	850P600327	CAM 2	
355	850A600099	M-B 3 LEVER ASS'Y	
356	850P300114	GEAR,LOADING S	
357	850P300115	GEAR,LOADING T	
358	850P800147	SPRING,LOADING GEAR	
359	850P800167	SPRING,AZIMUTH	
360	8144J30604	CONEHEAD SCREW	M3*6 CH
361	8146230A14	JOINT SCREW BIND	M3*11 CH
362	850P500010	ADJUST NUT	
363	850P800161	SPRING,FRONT LOADING LEVER	
364	850P600313	PULLEY,LOADING MOTOR	
365	850P600277	BELT,REEL	
366	850P800146	SPRING,P4	
367	850P600273	SLEEVE,P1	
368	850PAA0080	SHIELD,CASE	
369	850P000262	BRACKET,WORM 3	
370	789JRA0001	BELT,FRONT LOADING	
371	850PAA0112	SHIELD,LID 6	
372	868501H804	TAP TITE(S) PAN W6	3*8 CH
373	850P000285	CS-RING	2.6*5.4*0.1
401	850P900457	GEAR,LINK L	
402	850P800175	SPRING,LINK GEAR L	
403	850P900358	GEAR,SYNCHRO	
404	850P900360	LEVER,FLAP	
405	850P800157	SPRING,FLAP	
406	850A900096	TOP BRACKET ASS'Y	
407	850P900458	LOCKER	
408	850P800154	SPRING,LOCKER	
409	850P900349	CASS.SIDE L	
410	850P900354	SPRING,PACK	
411	850P900350	CASS.SIDE R	
412	850P900365	REMOVING	

REF.NO	PART NO	DESCRIPTION	
413	850P800155	SPRING,REMOVING	
414	850P900388	CASS.HOLDER	
415	850P900267	SHAFT,SYNCHRO	
416	850P900455	TAPE GUIDE PIECE	
417	850P900348	BRACKET,SIDE R1	
418	850P900361	LEVER,FL SW.	
419	850P800158	SPRING,FL SW.LEVER	
420	850A900098	SIDE BRACKET R2 ASS'Y	
421	850P900456	GEAR,LINK R	
422	850P800153	SPRING,CLUTCH GEAR	
423	850P800176	SPRING,LINK GEAR R	
424	850P900357	GEAR,CLUTCH	
425	850P900362	LEVER,LOCK	
426	850P800159	SPRING,LOCK LEVER	
427	850P900367	WHEEL	
428	850P900364	LEVER,CLUTCH	
429	850P900363	LEVER,SLIDE	
430	850P800160	SPRING,SLIDE LEVER	
431	850P900366	JOINT,PULLEY	
432	850A900082	WORM ASS'Y	
433	850P900353	OPENER	
434	850P800156	SPRING,OPENER	
435	850P900396	COVER,SENSOR	
436	A44802A640	SIDE BRACKET R ASS'Y	
437	A44802A690	CASSETTE HOLDER ASS'Y	
501	868N71G604	TAP TITE(S) PAN	2.6*6 CH
502	8102130404	PAN	M3*4 CH
503	8107226804	TAP TITE(S) BIND	2.6*8 CH
504	8107230A44	TAP TITE(S) BIND	3*14 CH
505	8107230A64	TAP TITE(S) BIND	3*16 CH
506	8107230604	TAP TITE(S) BIND	3*6 CH
507	8107230804	TAP TITE(S) BIND	3*8 CH
508	8110230804	TAP TITE(P) BIND	3*8 CH
509	83ETW25000	E-RING	2.5
510	82Q3154B3N	PW	3.1*5.4*T0.13
	82Q3154C5N	PW	3.1*5.4*T0.25
	82Q315403N	PW	3.1*5.4*T0.3
511	82P255504N	PW(CUT)	2.5*5.5*T0.4
512	82P316005N	PW(CUT)	3.1*6.0*T0.5
513	82A3270054	WASHER	3.1*7.0*T0.5
514	82A4080054	WASHER	4.3*8.0*T0.5
515	8300720000	NYLON NUT	M2
516	815DJ20302	SET SCREW 6CUP POINT	M2*3 BK
517	8145J30601	SCREW +UPSET	M3*6 NI
518	83CST35050	CS RING	3.5
519	82A3070C5N	PW	3.1*7.0*T0.25
520	86817BG804	TAPPING(BO) WH6	2.6*8 CH
521	82P2660C5N	PW(CUT)	2.6*6.0*T0.25
522	83ETW30000	E-RING	3
523	82P306005N	PW(CUT)	3.1*6.0*T0.5
550	82Q315405N	PW	3.1*5.4*T0.5
551	86817CGA04	TAPPING(BO) BIND WH6.5	2.6*10 CH
C1501	CH4FF03H4Z	CC	22000 PF 25V
C1502	CH4FF03H4Z	CC	22000 PF 25V
CD5001	068126017A	CORD EIS CONNECTOR	8126017A
CD5003	068122007A	CORD EIS CONNECTOR	8122007A
CP1103	069R7H0069	CONNECTOR PCB SIDE	52044-1710
D1101	0010100300	INFRARED LED	LN59L
H5001	1523D91010	HEAD AUDIO CONTROL	HVMZA1054A
H5002	1543D02004	HEAD FULL ERASE	HVFMF0006A
L1501	02BL000005	ELECTRO MAGNET	JTM1002-01-01
M101	1596N58008	MOTOR,LOADING	MXN-13FB12F
M2001	1510398011	CAPSTAN,DD UNIT	F2QKB85
PCB102	A44802A550	PCB ASS'Y	VE0280
Q1101	0000G00040	PHOTO TRANSISTOR	PT493FT
Q1102	0000G00040	PHOTO TRANSISTOR	PT493FT
Q1510	0002300140	PHOTO COUPLER	SPI-315-04
R1501	R001T6221J	RC	220 OHM 1/6W
R1502	R001T6331J	RC	330 OHM 1/6W
R1504	R002T2101J	RC	100 OHM 1/2W
SW101	0500211001	PUSH SWITCH	SPPB61023A
SW102	0520244002	SWITCH,ROTARY	SRZZ00081A
SW103	0501211001	PUSH SWITCH	SPPB51096A
UN4001	A44802A500	UNIT,CYLINDER	A44802A500
UN4002	A42350620	UPPER DRUM ASS'Y	A42350620

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION	
RESISTOR			
R611	R00104106J	RC	10M OHM 1/4W
CAPACITORS			
C501	E011F3332M	CE	3300 UF 25 V
C502	E011F3222M	CE	2200 UF 25 V
C606	CH40F0314Z	CC	10000 PF 25 V
C611	E59A0P473Z	CE	0.047 UF 5.5V
C2028	CHG0F03H4Z	CC	0.022 UF 25 V
C4205	CH40F0314Z	CC	10000 PF 25 V
SEMICONDUCTORS			
⚠ D501	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
⚠ D502	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
⚠ D503	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
⚠ D504	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
⚠ D505	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
⚠ D506	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
⚠ D507	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
⚠ D508	D23TDSF10T	DIODE,RECTIFIER	DSF10TB-BT-A
D509	D28T011E20	DIODE,SILICON	11E2TA1
D510	D28T011E20	DIODE,SILICON	11E2TA1
⚠ D511	DB7T2MR150	GLASS SEALED LED	LTZ-MR15-T77
D512	D93013001B	DIODE,ZENER	GZB30B
D513	D93T01300Z	DIODE,ZENER	GZA13 Z BT
D514	D17T001320	DIODE,SILICON	1SS132T-77
D515	D28T011ES1	DIODE,SILICON	11ES1TA1
D606	D17T001320	DIODE,SILICON	1SS132T-77
D607	D17T001320	DIODE,SILICON	1SS132T-77
D612	D17T001320	DIODE,SILICON	1SS132T-77
D614	D17T001320	DIODE,SILICON	1SS132T-77
D615	D17T001320	DIODE,SILICON	1SS132T-77
D617	D17T001320	DIODE,SILICON	1SS132T-77
D618	D17T001320	DIODE,SILICON	1SS132T-77
D620	D17T001320	DIODE,SILICON	1SS132T-77
D622	002112P010	LED	LN21RPH-(TA)
D625	D94UA6R2J2	DIODE,ZENER	HZS6R2JB2-T
D632	D17T001320	DIODE,SILICON	1SS132T-77
D633	D17T001320	DIODE,SILICON	1SS132T-77
D1003	D13TGMA010	DIODE,SILICON	GMA-01-BT
D1005	D94TA130J1	DIODE,ZENER	HZS13JB1-TE
D1009	D13TGMA010	DIODE,SILICON	GMA-01-BT
D1010	D13TGMA010	DIODE,SILICON	GMA-01-BT
D1011	D13TGMA010	DIODE,SILICON	GMA-01-BT
D1012	D28T011ES1	DIODE,SILICON	11ES1TA1
D1013	D94TA100J2	DIODE,ZENER	HZS10JB2-TE
D2003	D13TGMA010	DIODE,SILICON	GMA-01-BT
D2004	D13TGMA010	DIODE,SILICON	GMA-01-BT
D2007	D13TGMA010	DIODE,SILICON	GMA-01-BT
D2008	D13TGMA010	DIODE,SILICON	GMA-01-BT
D2012	D28T011ES1	DIODE,SILICON	11ES1TA1
D2013	D13TGMA010	DIODE,SILICON	GMA-01-BT
D3001	D13TDS442X	DIODE,SILICON	DS442X-BT
D3004	D13TDS442X	DIODE,SILICON	DS442X-BT
D4001	D17T001320	DIODE,SILICON	1SS132T-77
D4002	D17T001320	DIODE,SILICON	1SS132T-77
D4005	D94TA9R1J2	DIODE,ZENER	HZS9R1JB2-TE
D4008	D94TA6R8J2	DIODE,ZENER	HZS6R8JB2-TE
D4201	D94TA130J2	DIODE,ZENER	HZS13JB2-TE
D6002	D14U001660	DIODE,SILICON	1SS166-03TE
D6003	DD3RLFB01L	DIODE,SILICON	LFB-01L
D6005	DD3RLFB01L	DIODE,SILICON	LFB-01L
D6501	DD3RLFB01L	DIODE,SILICON	LFB-01L
D6502	DD3RLFB01L	DIODE,SILICON	LFB-01L
⚠ IC501	I23S953420	IC	STK5342
⚠ IC502	I02190574J	IC	UPC574J-T
IC601	I56DT7005C	IC	OEC7005C
IC602	I01901280M	IC	MN1280M
IC603	I56D086300	IC	M58630P
IC701	I9KD647000	IC	SAA4700
IC1001	I54D50017A	IC	OEC0017
IC1002	I06S51954A	IC	M51954AL
IC1003	I07S062470	IC	BA6247
IC1005	I07S003930	IC	BA10393N
IC2001	I97D49011A	IC	OEC9011
IC3001	I03D373300	IC	LA7330
IC3701	I07TC7025L	IC	BA7025L
IC4001	I03D37323A	IC	LA7323A
IC4002	I08D369653	IC	MSM6965-3RS
IC4101	I03DG73200	IC	LA7320
⚠ IC5001	I07D767AS0	IC	BA7767AS
IC6001	I03DA7530N	IC	LA7530N
IC6002	I03D06358T	IC	LA6358T
IC6003	I03S079100	IC	LA7910
IC6501	I03S072100	IC	LA7210

REF.NO	PART NO	DESCRIPTION	
SEMICONDUCTORS (CONT)			
⚠ Q501	TA3T0984K0	TRANSISTOR,SILICON	2SA984K-AA
⚠ Q502	TD70019330	TRANSISTOR,SILICON	2SD1933
⚠ Q505	TD3H018250	TRANSISTOR,SILICON	2SD1825Z-LU
Q601	TCTT0536S0	TRANSISTOR,SILICON	2SC536-SPA-AC
⚠ Q1001	TD3T011110	TRANSISTOR,SILICON	2SD1111-AA
Q1005	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
Q1006	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
⚠ Q1007	TC3T022740	TRANSISTOR,SILICON	2SC2274-AA
Q1010	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
⚠ Q1011	TB3T006980	TRANSISTOR,SILICON	2SB698-AA
Q1013	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
Q1014	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
Q1015	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
Q1017	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
Q2001	TD3T011110	TRANSISTOR,SILICON	2SD1111-AA
Q2002	TB3T009260	TRANSISTOR,SILICON	2SB926-AA
Q2003	TP3TD06001	COMPOUND TRANSISTOR	2SA1345-AC
Q2004	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
Q2005	TNTTC03001	COMPOUND TRANSISTOR	2SC3400-T
Q2006	TCTT0536S0	TRANSISTOR,SILICON	2SC536-SPA-AC
Q2007	TCTT0536S0	TRANSISTOR,SILICON	2SC536-SPA-AC
Q2008	TCTT0536S0	TRANSISTOR,SILICON	2SC536-SPA-AC
Q3001	T67A1037K0	TRANSISTOR,SILICON	2SA1037KT147
Q3002	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q3004	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q3006	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q3007	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q3008	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q3701	TN7TC05001	COMPOUND TRANSISTOR	DTC124EKT147
Q3702	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q4001	T67A1037K0	TRANSISTOR,SILICON	2SA1037KT147
Q4002	T83A028127	TRANSISTOR,SILICON	2SC2812-L7-TA
Q4003	T83A028127	TRANSISTOR,SILICON	2SC2812-L7-TA
Q4005	T83A028127	TRANSISTOR,SILICON	2SC2812-L7-TA
Q4006	T83A028127	TRANSISTOR,SILICON	2SC2812-L7-TA
Q4007	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q4008	T67A1037K0	TRANSISTOR,SILICON	2SA1037KT147
Q4009	T87A02412K	TRANSISTOR,SILICON	2SC2412KT147
Q4010	TN7TC05001	COMPOUND TRANSISTOR	DTC124EKT147
Q4201	TCTT0536S0	TRANSISTOR,SILICON	2SC536-SPA-AC
Q5005	TC1T013170	TRANSISTOR,SILICON	2SC1317-T
Q6001	T83A028126	TRANSISTOR,SILICON	2SC2612-L6-TA
Q6002	T63A011790	TRANSISTOR,SILICON	2SA1179-TA
Q6003	TN3TC05001	COMPOUND TRANSISTOR	2SC3396(CY)-TA
Q6004	TC3T030000	TRANSISTOR,SILICON	2SC3000-AA
Q6005	T83A028126	TRANSISTOR,SILICON	2SC2812-L6-TA
Q6006	TC3T0536K0	TRANSISTOR,SILICON	2SC536K-NP-AA
Q6501	T83A028126	TRANSISTOR,SILICON	2SC2812-L6-TA
Q6502	TN3TC05001	COMPOUND TRANSISTOR	2SC3396(CY)-TA
COILS & TRANSFORMERS			
L701	021JA6101K	COIL	100 UH
L1001	021B73101K	COIL	100 UH
L3002	021JA6180K	COIL	18 UH
L3003	021JA63R3K	COIL	3.3 UH
L3004	021JA6101K	COIL	100 UH
L3005	021B73101K	COIL	100 UH
L3006	021JA6150K	COIL	15 UH
L3701	021B73101K	COIL	100 UH
L3702	032622001N	COIL,TRAP	2622001
L4001	021JA6221K	COIL	220 UH
L4003	021JA6470K	COIL	47 UH
L4004	021JA61R0M	COIL	1.0 UH
L4005	021B73101K	COIL	100 UH
L4006	021B73101K	COIL	100 UH
L4007	021JA6330K	COIL	33 UH
L4009	021JA6151K	COIL	150 UH
L4010	021JA6220K	COIL	22 UH
L4011	021JA6100K	COIL	10 UH
L4012	021JA6390K	COIL	39 UH
L4013	021JA6150K	COIL	15 UH
L4014	021JA6121K	COIL	120 UH
L4015	021JA6270K	COIL	27 UH
L4016	021JA6101K	COIL	100 UH
L4101	021B73101K	COIL	100 UH
L4102	021B73101K	COIL	100 UH
L5001	021B73101K	COIL	100 UH
L5003	021J74682J	COIL	6.8 MH
L6001	021JA6R82M	COIL	0.82 UH
L6002	021JA6100K	COIL	10 UH
L6003	021JA6100K	COIL	10 UH

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION
	COILS & TRANSFORMERS (CONT)	
L6004	033200001K	COIL,VIDEO IFT 3200001
L6005	033200002K	COIL,VIDEO IFT 3200002
L6006	021JA6270K	COIL 27 UH
L6007	021JA65R6K	COIL 5.6 UH
L6008	021B73101K	COIL 100 UH
L6009	033200003K	COIL,VIDEO IFT 3200003
L6012	021B73101K	COIL 100 UH
L6013	021B73101K	COIL 100 UH
L6014	03320M001K	COIL,VIDEO IFT 320M001
L6501	021B73101K	COIL 100 UH
⚠ T501	0405570220	TRANSFORMER,POWER AC 0557022
T5001	0336260028	COIL,BIAS OSC 3626002
	JACK	
J4201	0632000024	JACK,PLATE JPJ3512-01-430
	SWITCHES	
SW601	0504201T22	SWITCH,TACT SKHVBD005
SW602	0504201T22	SWITCH,TACT SKHVBD005
SW603	0504201T22	SWITCH,TACT SKHVBD005
SW604	0504201T22	SWITCH,TACT SKHVBD005
SW605	0504201T22	SWITCH,TACT SKHVBD005
SW606	0504201T22	SWITCH,TACT SKHVBD005
SW608	0504201T22	SWITCH,TACT SKHVBD005
	VARIABLE RESISTORS	
VR601	V014025B05	VR,ROTARY EVU-F3A F20 B25
VR2001	V1263Q5BT5	VR,SEMIFIXED RH0636CS5R07B
VR2002	V126315BT5	VR,SEMIFIXED RH0636C15R07B
VR3701	V126313BT5	VR,SEMIFIXED RH0636C13R07B
VR4001	V1263H4BT5	VR,SEMIFIXED RH0636CJ4R07B
VR4002	V126314BT5	VR,SEMIFIXED RH0636C14R07B
VR4003	V1263L3BT5	VR,SEMIFIXED RH0636CN3R07B
VR4004	V126314BT5	VR,SEMIFIXED RH0636C14R07B
VR4005	V126314BT5	VR,SEMIFIXED RH0636C14R07B
VR4101	V126214BT1	VR,SEMIFIXED RH0632C14R01
VR4102	V126214BT1	VR,SEMIFIXED RH0632C14R01
VR5001	V126314BT5	VR,SEMIFIXED RH0636C14R07B
VR5002	V1263E5B03	VR,SEMIFIXED RH0624CE5J
VR6001	V126214BT1	VR,SEMIFIXED RH0632C14R01
VR6002	V126314BT5	VR,SEMIFIXED RH0636C14R07B
	P.C. BOARDS ASS'Y	
PCB101	A44826A01AB	PCB ASS'Y VV0165
PCB301	A44826A30AB	PCB ASS'Y VV0156
PCB401	A43709A33AB	PCB ASS'Y VE0244
PCB501	A44826A02AB	PCB ASS'Y VP0081
PCB502	A44826A02AB	PCB ASS'Y VE0303
PCB601	A44826A27AB	PCB ASS'Y VE0300
	MISCELLANEOUS	
BT601	141T003004	BATTERY,MANGAN UM-3 1.5V
BZ601	0717000003	BUZZER,PIEZOELECTRIC KBS-13DB-4P-2
⚠ CD501	120M450031	CORD,AC E2N 7FEET
CD502	122U031203	CORD,JUMPER 2U031203
CP501	069R260149	CONNECTOR,PCB SIDE 52008-0610
CP502	069R280149	CONNECTOR,PCB SIDE 52008-0810
CP503	0694430100	CORD,UX CONNECTOR 2-173270-3
CX601	0694270070	CONNECTOR,PCB SIDE 173992-7
CX602	06942A0070	CONNECTOR,PCB SIDE 1-173992-0
CY601	0694270060	CONNECTOR,PCB SIDE 173991-7
CY602	06942A0060	CONNECTOR,PCB SIDE 1-173991-0
CD2002	068126019A	CORD,EIS CONNECTOR 8126019A
CD2003	122B0H1001	CORD,JUMPER 2B0H1001
CD2004	068129017A	CORD,EIS CONNECTOR 8129017A
CD2501	1226062401	CORD,JUMPER 26062401
CD2502	1226083001	CORD,JUMPER 26083001
CD4102	068128024A	CORD,EIS CONNECTOR 8128024A
CD6001	0682H27003	CORD,COAXIAL 82H27003
CD6002	068OL05004	CABLE,PAL PDS05-DP05-3C1.5
CF3701	10114R1703	FILTER,CERAMIC EFCS4R17MS4A
CF6001	1027038R91	FILTER,SAW F1034
CF6002	1012T5R501	FILTER,CERAMIC CDA5.5MC26-TF20
CF6003	1012T5R502	FILTER,CERAMIC SFE5.5MB-TF20
CF6004	1012T5R503	FILTER,CERAMIC TRAP TPS5.5MB-TF20
CP2001	069H220329	CONNECTOR,PCB SIDE IL-S-2P-S2T2-EF
CP2003	069R7H0059	CONNECTOR,PCB SIDE 52045-1710
CP4001	0697160189	CONNECTOR,PCB SIDE TXX-H06P-G1
CP4002	0697160189	CONNECTOR,PCB SIDE TXX-H06P-G1
CP4003	0697160189	CONNECTOR,PCB SIDE TXX-H06P-G1
CP4004	069Q160179	CONNECTOR,PCB SIDE CPB1806-0101

REF.NO	PART NO	DESCRIPTION
	MISCELLANEOUS (CONT)	
CP4101	0694280139	CONNECTOR,PCB SIDE 173979-8
CP5001	069H250329	CONNECTOR,PCB SIDE IL-S-5P-S2T2-EF
CP6001	069Q160179	CONNECTOR,PCB SIDE CPB1806-0101
CP6002	069R2A0319	CONNECTOR,PCB SIDE 5550-10A
DL3001	104A24R436	DELAY LINE,GLASS ADL-SE2244R
⚠ F501	080ET1R601	FUSE BET 1.6A(T) 250V
⚠ F502	080ET02001	FUSE BET 2 A(T) 250V
⚠ F503	080ET02001	FUSE BET 2 A(T) 250V
FH501	067M0T0004	HOLDER,FUSE H0451
FH502	067M0T0005	HOLDER,FUSE H0452
⚠ ICP051	084EF0R301	IC PROTECTOR PRF-315-F003
NR601	110E4223T4	R,NETWORK RN5E5A223J01
NR1001	110E3472T2	R,NETWORK RN5E4A472J01
NR1002	110E3223T2	R,NETWORK RN5E4A223J01
NR1003	110E3223T2	R,NETWORK RN5E4A223J01
OS601	0779010002	REMOTE RECEIVER GP-1U541
PF3001	114IL15605	FILTER,LOW PASS 41IL15605
PF3002	114IB44606	FILTER,BAND PASS 41B44606
PF3003	114IB50604	FILTER,BAND PASS 41B50604
PF4001	114IL30606	FILTER,LOW PASS 41L30606
PF4002	114IH14605	FILTER,HIGH PASS 41H14605
PF4003	114IL33604	FILTER,LOW PASS 41L33604
PF4201	103L02R102	DELAY 3L02R102
TC601	0100614T08	C,CERAMIC TRIMMER VCT51F716A
TM601	076M00K010	TRANSMITTER R56-6046
⚠ TU6001	0145M01016	TUNER,UHF-VHF TEME1-003(KAI)
⚠ TU6002	0151N01008	RF-CONVERTER ENC-87941
V601	096H70R304	TUBE,FLUORESCENT DISPLAY FV301G
X601	100EA4R108	CRYSTAL CSA-309
X602	100D32R801	CRYSTAL DT-26S 32.768KHZ
X1001	1002T4R001	CERAMIC OSCILLATOR CSA4.00MG-TF01
X3001	1006A4R302	CRYSTAL HC-49/U 4.43361875MHZ
X6501	1003R50001	CERAMIC OSCILLATOR KBR-500AH2

RESISTOR
- RC.....CARBON RESISTOR

CAPACITORS
- CC.....CERAMIC CAPACITOR
- CE.....ALUMI ELECTROLYTIC CAPACITOR
- CP.....POLYESTER CAPACITOR
- CPP.....POLYPROPYLENE CAPACITOR
- CPL.....PLASTIC CAPACITOR
- CMP.....METAL POLYESTER CAPACITOR
- CMPL.....METAL PLASTIC CAPACITOR
- CMPP.....METAL POLYPROPYLENE CAPACITOR
- CST.....STYROL CAPACITOR